PATRICIA A. PESHKA
PURCHASING AGENT

SCOTT AVEDISIAN
MAYOR

CITY OF WARWICK
PURCHASING DIVISION
3275 POST ROAD
WARWICK, RHODE ISLAND 02886
TEL (401) 738-2000 EXT. 6240
FAX (401) 737-2364

The following notice is to appear on the City of Warwick's website Friday, March 18, 2016. The website address is http://www.warwickri.gov (Online Resources Tab).

CITY OF WARWICK
BIDS REQUESTED FOR

Bid #2016-301 Fire Alarm Upgrades and/or Installation Phase V
Fire Stations 2, 5, 8 & 9

Specifications are available in the Purchasing Division, Warwick City Hall, Monday through Friday, 8:30 AM until 4:30 PM on or after Friday, March 18, 2016.

A **mandatory** pre-bid conference will be held on Tuesday, March 29, 2016 **onsite** at Fire Station 3, 2373 W. Shore Rd., Warwick, RI at 10:00 AM.

Sealed bids will be received by the Purchasing Division, Warwick City Hall, 3275 Post Road, Warwick, Rhode Island 02886 up until 10:00 AM, Wednesday, April 6, 2016. The bids will be opened publicly commencing10:00 AM, on the same day in the Lower Level Conference Room, Warwick City Hall.

Awards shall be made on the basis of the lowest evaluated or responsive bid price.
Please note that no bids can be accepted via email or fax.

Individuals requesting interpreter services for the hearing impaired must notify the Purchasing Division at 401-738-2000, extension 6241at least 48 hours in advance of the bid opening date.

Patricia A. Peshka
Purchasing Agent

PLEASE SUBMIT THIS PAGE WITH YOUR BID

Acknowledgement of Addendum (if applicable)

Addendum Number	**Signature of Bidder**
_____	_____
_____	_____

COMPANY NAME: _____

COMPANY ADDRESS: _____

_____

BIDDER'S SIGNATURE: _____

BIDDER'S NAME (PRINT): _____

TITLE: _____ TEL. NO.:_____

EMAIL ADDRESS: _____*

*Please include your email address. Future bids will be emailed, unless otherwise noted.

II. AWARD AND CONTRACT:

The CITY OF WARWICK, acting as duly authorized through its Purchasing Agent/Finance Director/Mayor (delete if inapplicable), accepts the above bid and hereby enters into a contract with the above party to pay the bid price upon completion of the project or receipt of the goods unless another payment schedule is contained in the specifications. All terms of the specifications, both substantive and procedural, are made terms of this contract.

DATE: _____ _____

BID #2015-301 PURCHASING AGENT

CERTIFICATION & WARRANT FORM*

This form must be completed and submitted with sealed bid.
Failure to do so will result in automatic rejection.

Any and all bids shall contain a certification and warrant that they comply with all relevant and pertinent statues, laws, ordinances and regulations, in particular, but not limited to Chapter 16-Conflicts of Interest, of the Code of Ordinances of the City of Warwick. Any proven violation of this warranty and representation by a bidder at the time of the bid or during the course of the contract, included, but not limited to negligent acts, either directly or indirectly through agents and/or sub-contractors, shall render the bidder's contract terminated and the bidder shall be required to reimburse the City for any and all costs incurred by the City, including reasonable attorney fees, to prosecute and/or enforce this provision.

_____ _____
Signature Date

_____
Company Name

_____
Address

_____
Address

***This form cannot be altered in any way**

CITY OF WARWICK
NOTICE TO BIDDERS

Bid #2016-301 Fire Alarm Upgrades and/or Installation Phase V
Fire Stations 2, 5, 8 & 9

Specifications are available in the Purchasing Division, Warwick City Hall, Monday through Friday, 8:30 AM until 4:30 PM on or after Friday, March 18, 2016.

A **mandatory** pre-bid conference will be held on Tuesday, March 29, 2016 beginning at 10:00 AM. This pre-bid conference will be for both Bid #2016-301 Fire Alarm Upgrades and/or Installation Phase V - Fire Stations 2, 5, 8 & 9 and Bid #2016-302 Fire Alarm Upgrades and/or Installation Phase VI - Fire Stations 3, 4 & 6. It will begin **onsite** at Fire Station 3, 2373 W. Shore Rd., Warwick, RI and will proceed in the following order:

STATION	LOCATION	BID #
3	2373 W. Shore Rd.	302
4	1501 W. Shore Rd.	302
6	456 W. Shore Rd.	302
8	1651 Post Rd.	301
2	771 Post Rd.	301
9	314 Commonwealth Ave.	301
5	450 Cowesett Rd.	301

Sealed bids will be received by the Purchasing Division, Warwick City Hall, 3275 Post Road, Warwick, Rhode Island 02886 up until 10:00 AM, Wednesday, April 6, 2016. The bids will be opened publicly commencing10:00 AM, on the same day in the Lower Level Conference Room, Warwick City Hall.

If you received this document from our homepage or from a source other than the City of Warwick Purchasing Division, please check with our office prior to submitting your bid to ensure that you have a complete package. The Purchasing Division cannot be responsible to provide addenda if we do not have you on record as a plan holder.

The opening of bids shall be in the order established by the posted agenda and the agenda shall continue uninterrupted until completion.

Once an item has been reached and any bids on that item has been opened, no other bids on that item will be accepted and any such bid shall be deemed late.

The contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap for any position for which the employee or applicant is qualified and that in the event of noncompliance the City may declare the contractor in breach and take any necessary legal recourse including termination or cancellation of the contract.

A bidder filing a bid thereby certifies that no officer, agent, or employee of the City has a pecuniary interest in the bid or has participated in contract negotiations on the part of the City, that the bid is made in good faith without fraud, collusion, or connection of any kind with any other bidder for the same call for bids, and that the bidder is competing solely in his own behalf without connection with, or obligation to, any undisclosed person or firm.

All bids should be submitted with one (1) original and one (1) copy in a sealed envelope. The exterior of the envelope shall be plainly marked to include: *YOUR COMPANY NAME* and "Bid #2016-301 Fire Alarm Upgrades and/or Installation Phase V - Fire Stations 2, 5, 8 & 9." Bids received prior to the time of the opening will be securely kept, unopened. No responsibility will be attached to an officer or person for the premature opening of a bid not properly addressed and identified. No bids shall be accepted via facsimile or email.

Should you have any questions, please contact Joseph Blake, Building Maintenance, 3275 Post Rd. Annex, Warwick, RI at 401-738-2000, extension 6350.

All bids should be written in ink or typed. If there is a correction with whiteout, the bidder must initial the change.

Negligence on the part of the bidder in preparing the bid confers no rights for the withdrawal of the bid after it is opened.

Any deviation from the specifications must be noted in writing and attached as part of the bid. The bidder shall indicate the item or part with the deviation and indicate how the bid will deviate from specifications.

The contractor must carry sufficient liability insurance and agree to indemnify the city against all claims of any nature, which might arise as a result of his operations or conduct of work.

Bid surety in the form of a bank check, original bid bond or certified check in the amount of five (5) percent of the total bid price must be submitted with each bid. If a bid bond is submitted, it shall be duly executed by the bidder as principal and having as surety thereon a surety company licensed to do business in the State of Rhode Island and approved by the owner.

The successful bidder must provide the City of Warwick with an original certificate of insurance (faxes are not acceptable) for General Liability in a minimum amount of $1 million, naming the ***City of Warwick as the additional insured*** and so stated on the certificate with the bid name and bid number. It is the vendor's responsibility to provide the City of Warwick with an updated Certificate of Insurance upon expiration of the original certificate.

The successful bidder must furnish a labor and material bond, and a performance bond in the amount of 100 percent of the total bid price.

When a bid is awarded to a corporation, limited liability company or other legal entity, prior to commencing work under the awarded bid, that corporation, company or legal entity may be required to provide to the Purchasing Agent a Certificate of Good Standing dated no more than thirty (30) days prior to the date upon which the bid award was made.

The successful bidder will provide said insurance/bonds and Certificate of Good Standing Letter within five (5) days after notification of award or the City reserves the right to rescind said award.

Failure to provide adequate insurance coverage within the specified duration of time as set forth is a material breach of contract and grounds for termination of the contract.

The successful bidder must comply with all Rhode Island Labor Laws, Chapter 37-12-13, and all other applicable Local, State and Federal Laws.

Prevailing Wages will apply to this bid. Current rates may be viewed at http://www.dlt.state.ri.us/pw.

General Decision Number: RI160001 03/11/2016 RI1

Superseded General Decision Number: RI20150001

State: Rhode Island

Construction Types: Building, Heavy (Heavy and Marine) and Highway

Counties: Rhode Island Statewide.

BUILDING CONSTRUCTION PROJECTS (does not include residential construction consisting of single family homes and apartments up to and including 4 stories) HEAVY, HIGHWAY AND MARINE CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.15 for calendar year 2016 applies to all contracts subject to the Davis-Bacon Act for which the solicitation was issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.15 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2016. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available

at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/08/2016
1	01/15/2016
2	01/29/2016
3	02/12/2016
4	02/19/2016
5	03/04/2016
6	03/11/2016

ASBE0006-006 06/01/2015

	Rates	Fringes
HAZARDOUS MATERIAL HANDLER (Includes preparation, wetting, stripping, removal scrapping, vacuuming, bagging & disposing of all insulation materials, whether they contain asbestos or not, from mechanical systems)	$ 31.63	18.30

ASBE0006-008 09/01/2015

	Rates	Fringes
Asbestos Worker/Insulator Includes application of all insulating materials, protective coverings, coatings & finishes to all types of mechanical systems.	$ 39.43	25.65

BOIL0029-001 10/01/2009

	Rates	Fringes
BOILERMAKER	$ 38.25	17.04

BRRI0003-001 12/01/2014

	Rates	Fringes
Bricklayer, Stonemason, Pointer, Caulker & Cleaner	$ 35.94	23.67

BRRI0003-002 09/01/2015

	Rates	Fringes
Marble Setter, Terrazzo Worker & Tile Setter	$ 36.29	25.14

BRRI0003-003 09/01/2015

	Rates	Fringes
Marble, Tile & Terrazzo Finisher	$ 30.61	23.95

CARP0094-001 01/01/2016

	Rates	Fringes
CARPENTER (Includes Soft Floor Layer)	$ 34.56	25.50
Diver Tender	$ 35.56	25.50
DIVER	$ 46.36	25.50
Piledriver	$ 34.56	25.50
WELDER	$ 35.56	25.50

FOOTNOTES:

When not diving or tending the diver, the diver and diver tender shall receive the piledriver rate. Diver tenders shall receive $1.00 per hour above the pile driver rate when tending the diver.

Work on free-standing stacks, concrete silos & public utility electrical power houses, which are over 35 ft. in height when constructed: $.50 per hour additional.

Work on exterior concrete shear wall gang forms, 45 ft. or more above ground elevation or on setback: $.50 per hour additional.

The designated piledriver, known as the "monkey": $1.00 per hour additional.

CARP1121-002 10/01/2015

	Rates	Fringes
MILLWRIGHT	$ 34.47	26.38

ELEC0099-002 06/01/2015

	Rates	Fringes
ELECTRICIAN	$ 35.83	59.94%
Teledata System Installer	$ 26.87	13.72%+13.57

FOOTNOTES:

Work of a hazardous nature, or where the work height is 30 ft. or more from the floor, except when working OSHA-approved lifts: 20% per hour additional.

Work in tunnels below ground level in combined sewer outfall: 20% per hour additional.

ELEV0039-001 01/01/2016

	Rates	Fringes
ELEVATOR MECHANIC	$ 47.37	29.985+A+B

FOOTNOTES:

A. PAID HOLIDAYS: New Years Day; Memorial Day; Independence Day; Labor Day; Veterans' Day; Thanksgiving Day; the Friday after Thanksgiving Day; and Christmas Day.

B. Employer contributes 8% basic hourly rate for 5 years or more of service of 6% basic hourly rate for 6 months to 5 years of service as vacation pay credit.

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* ENGI0057-001 11/29/2015

	Rates	Fringes
Operating Engineer: (power plants, sewer treatment plants, pumping stations, tunnels, caissons, piers, docks, bridges, wind turbines, subterranean & other marine and heavy construction work)		
GROUP 1	$ 36.15	24.10+a
GROUP 2	$ 31.77	24.10+a
GROUP 3	$ 28.92	24.10+a
GROUP 4	$ 35.20	24.10+a
GROUP 5	$ 26.00	24.10+a

GROUP 6	$ 20.00	24.10+a
GROUP 7	$ 31.85	24.10+a
GROUP 8	$ 35.77	24.10+a

a. BOOM LENGTHS, INCLUDING JIBS:

150 feet and over + $ 2.00
180 feet and over + $ 3.00
210 feet and over + $ 4.00
240 feet and over + $ 5.00
270 feet and over + $ 7.00
300 feet and over + $ 8.00
350 feet and over + $ 9.00
400 feet and over + $10.00

a. PAID HOLIDAYS:
New Year's Day, President's Day, Memorial Day, July Fourth, Victory Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day, Christmas Day. a: Any employee who works 3 days in the week in which a holiday falls shall be paid for the holiday.

a. FOOTNOTES:
Hazmat work: $2.00 per hour additional.
Tunnel/Shaft work: $5.00 per hour additional.

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Digging machine, Ross Carrier, crane, lighter, locomotive, derrick, hoist, elevator, bidwell-type machine, shot & water blasting machine, paver, spreader, graders, front end loader (3 yds. and over), vibratory hammer & vacuum truck, roadheaders, forklifts, economobile type equipment, tunnel boring machines, concrete pump and on site concrete plants.

GROUP 2: Fireman & oiler.

GROUP 3: Oiler on crawler backhoe.

GROUP 4: Bulldozer, bobcats, skid steer loader, tractor, scraper, combination loader backhoe, roller, front end loader (less than 3 yds.), street and mobile-powered sweeper (3-yd. capacity), 8-ft. sweeper minimum 65 HP).

GROUP 5: Well-point installation crew.

GROUP 6: Utility Engineers and Signal Persons

GROUP 7: Heater, concrete mixer, stone crusher, welding machine, generator and light plant, gas and electric driven pump and air compressor.

GROUP 8: Boat & tug operator.

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* ENGI0057-002 11/29/2015

	Rates	Fringes
Power Equipment Operator (highway construction projects; water and sewerline projects which are incidental to highway construction projects; and bridge projects that do not span water)		
GROUP 1	$ 31.30	24.10+a
GROUP 2	$ 26.00	24.10+a
GROUP 3	$ 20.00	24.10+a
GROUP 4	$ 26.58	24.10+a
GROUP 5	$ 30.28	24.10+a
GROUP 6	$ 29.90	24.10+a
GROUP 7	$ 25.55	24.10+a
GROUP 8	$ 26.93	24.10+a
GROUP 9	$ 28.88	24.10+a

a. FOOTNOTE: a. Any employee who works three days in the week in which a holiday falls shall be paid for the holiday.

a. PAID HOLIDAYS: New Year's Day, President's Day, Memorial Day, July Fourth, Victory Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day & Christmas Day.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Digging machine, crane, piledriver, lighter, locomotive, derrick, hoist, boom truck, John Henry's, directional drilling machine, cold planer, reclaimer, paver, spreader, grader, front end loader (3 yds. and over), vacuum truck, test boring machine operator, veemere saw, water blaster, hydro-demolition robot, forklift, economobile, Ross Carrier, concrete pump operator and boats

GROUP 2: Well point installation crew

GROUP 3: Utlity engineers and signal persons

GROUP 4: Oiler on cranes

GROUP 5: Combination loader backhoe, front end loader (less than 3 yds.), forklift, bulldozers & scrapers and boats

GROUP 6: Roller,skid steer loaders, street sweeper

GROUP 7: Gas and electric drive heater, concrete mixer, light plant, welding machine, pump & compressor

GROUP 8: Stone crusher

GROUP 9: Mechanic & welder

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* ENGI0057-003 11/29/2015

BUILDING CONSTRUCTION

	Rates	Fringes
Power Equipment Operator		
GROUP 1	$ 35.42	24.10+a
GROUP 2	$ 35.20	24.10+a
GROUP 3	$ 31.20	24.10+a
GROUP 4	$ 28.35	24.10+a
GROUP 5	$ 34.50	24.10+a
GROUP 6	$ 34.07	24.10+a
GROUP 7	$ 31.39	24.10+a

a.BOOM LENTHS, INCLUDING JIBS:

150 ft. and over: + $ 2.00
180 ft. and over: + $ 3.00
210 ft. and over: + $ 4.00
240 ft. and over: + $ 5.00
270 ft. and over: + $ 7.00
300 ft. and over: + $ 8.00
350 ft. and over: + $ 9.00
400 ft. and over: + $10.00

a. PAID HOLIDAYS: New Year's Day, President's Day, Memorial Day, July Fourth, Victory Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day & Christmas Day. a: Any employee who works 3 days in the week in which a holiday falls shall be paid for the holiday.

a. FOOTNOTE: Hazmat work: $2.00 per hour additional.
Tunnel/Shaft work: $5.00 per hour additional.

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Digging machine, Ross carrier, crane, boomtrucks, lighter, locomotive, derrick, hoist, elevator, bidwell-type machine, shot & water blasting machine, paver, spreader, front end loader (3 yds. and over), vibratory hammer and vacuum truck

GROUP 2: Telehandler equipment, forklift, concrete pump & on-site concrete plant

GROUP 3: Fireman & oiler

GROUP 4: Oiler on crawler backhoe

GROUP 5: Bulldozer,skid steer loaders,bobcats, tractor, grader, scraper,combination loader backhoe, roller, front end loader (less than 3 yds.), street and mobile powered sweeper (3 yds. capacity), 8-ft. sweeper (minimum 65 hp)

GROUP 6: Well point installation crew

GROUP 7: Heater, concrete mixer, stone crusher, welding machine, generator for light plant, gas and electric driven pump & air compressor

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IRON0037-001 03/16/2015

	Rates	Fringes
IRONWORKER	$ 33.96	23.87

LABO0271-001 06/01/2014

BUILDING CONSTRUCTION

	Rates	Fringes
LABORER		
GROUP 1	$ 28.05	22.45
GROUP 2	$ 28.30	22.45
GROUP 3	$ 28.80	22.45
GROUP 4	$ 29.05	22.45
GROUP 5	$ 30.05	22.45

LABORERS CLASSIFICATIONS

GROUP 1: Laborer, Carpenter Tender, Mason Tender, Cement Finisher Tender, Scaffold Erector, Wrecking Laborer,

Asbestos Removal [Non-Mechanical Systems]

GROUP 2: Asphalt Raker, Adzemen, Pipe Trench Bracer, Demolition Burner, Chain Saw Operator, Fence & Guard Rail Erector, Setter of Metal Forms for Roadways, Mortar Mixer, Pipelayer, Riprap & Dry Stonewall Builder, Highway Stone Spreader, Pneumatic Tool Operator, Wagon Drill Operator, Tree Trimmer, Barco-Type Jumping Tamper, Mechanical Grinder Operator

GROUP 3: Pre-Cast Floor & Roof Plank Erectors

GROUP 4: Air Track Operator, Hydraulic & Similar Self-Powered Drill, Block Paver, Rammer, Curb Setter, Powderman & Blaster

GROUP 5: Toxic Waste Remover

LABO0271-002 06/01/2014

HEAVY AND HIGHWAY CONSTRUCTION

	Rates	Fringes
LABORER		
COMPRESSED AIR		
Group 1	$ 45.48	20.70
Group 2	$ 35.00	20.70
Group 3	$ 47.48	20.70
FREE AIR		
Group 1	$ 37.55	20.70
Group 2	$ 35.00	20.70
Group 3	$ 39.55	20.70
LABORER		
Group 1	$ 28.05	20.70
Group 2	$ 28.30	20.70
Group 3	$ 29.05	20.70
Group 4	$ 21.55	20.70
Group 5	$ 30.05	20.70
OPEN AIR CAISSON, UNDERPINNING WORK AND BORING CREW		
Bottom Man	$ 34.05	20.70
Top Man & Laborer	$ 33.10	20.70
TEST BORING		
Driller	$ 34.50	20.70
Laborer	$ 33.10	20.70

LABORER CLASSIFICATIONS

GROUP 1: Laborer; Carpenter tender; Cement finisher tender; Wrecking laborer; Asbestos removers [non-mechanical systems]; Plant laborer; Driller in quarries

GROUP 2: Adzeperson; Asphalt raker; Barcotype jumping tamper; Chain saw operators; Concrete and power buggy operator; Concrete saw operator; Demolition burner; Fence and guard rail erector; Highway stone spreader; Laser beam operator; Mechanical grinder operator; Mason tender; Mortar mixer; Pneumatic tool operator; Riprap and dry stonewall builder; Scaffold erector; Setter of metal forms for roadways; Wagon drill operator; Wood chipper operator; Pipelayer; Pipe trench bracer

GROUP 3: Air track drill operator; Hydraulic and similar powered drills; Brick paver; Block paver; Rammer and curb setter; Powderperson and blaster

GROUP 4: Flagger & signaler

GROUP 5: Toxic waste remover

LABORER - COMPRESSED AIR CLASSIFICATIONS

GROUP 1: Mucking machine operator, tunnel laborer, brake person, track person, miner, grout person, lock tender, gauge tender, miner: motor person & all others in compressed air

GROUP 2: Change house attendant, powder watchperson, top person on iron

GROUP 3: Hazardous waste work within the "HOT" zone

LABORER - FREE AIR CLASSIFICATIONS

GROUP 1: Grout person - pumps, brake person, track person, form mover & stripper (wood & steel), shaft laborer, laborer topside, outside motorperson, miner, conveyor operator, miner welder, heading motorperson, erecting operator, mucking machine operator, nozzle person, rodperson, safety miner, shaft & tunnel, steel & rodperson, mole nipper, concrete worker, form erector (wood, steel and all accessories), cement finisher (this type of work only), top signal person, bottom person (when heading is 50' from shaft), burner, shield operator and TBM operator

GROUP 2: Change house attendant, powder watchperson

GROUP 3: Hazardous waste work within the "HOT" zone

PAIN0011-005 06/01/2015

	Rates	Fringes
PAINTER		
Brush, Roller, Taper, Wall Coverer	$ 31.52	19.35
Epoxy, Tanks, Towers, Swing Stage & Structural Steel	$ 33.52	19.35
Spray, Sand & Water Blasting	$ 32.52	19.35

PAIN0011-006 06/01/2015

	Rates	Fringes
GLAZIER	$ 35.08	19.35

FOOTNOTES:

SWING STAGE: $1.00 per hour additional.

PAID HOLIDAYS: Labor Day & Christmas Day.

PAIN0011-011 06/01/2015

	Rates	Fringes
Painter (Bridge Work)	$ 45.95	19.35

PAIN0035-008 06/01/2011

	Rates	Fringes
Sign Painter	$ 24.79	13.72

PLAS0040-001 12/01/2015

BUILDING CONSTRUCTION

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 32.30	26.20
PLASTERER	$ 33.00	25.50

FOOTNOTE: Cement Mason: Work on free swinging scaffolds under 3 planks width and which is 20 or more feet above ground and any offset structure: $.30 per hour additional.

PLAS0040-002 07/19/2015

HEAVY AND HIGHWAY CONSTRUCTION

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 29.10	20.95

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* PLUM0051-002 03/01/2016

	Rates	Fringes
Plumbers and Pipefitters	$ 37.38	28.20

ROOF0033-004 01/01/2016

	Rates	Fringes
ROOFER	$ 33.53	21.84

SFRI0669-001 01/01/2016

	Rates	Fringes
SPRINKLER FITTER	$ 41.37	20.77

SHEE0017-002 12/01/2015

	Rates	Fringes
Sheet Metal Worker	$ 34.46	33.18

TEAM0251-001 08/01/2015

HEAVY AND HIGHWAY CONSTRUCTION

	Rates	Fringes
TRUCK DRIVER		
GROUP 1	$ 26.71	21.3225+A+B+C
GROUP 2	$ 26.86	21.3225+A+B+C
GROUP 3	$ 26.91	21.3225+A+B+C
GROUP 4	$ 26.96	21.3225+A+B+C
GROUP 5	$ 27.06	21.3225+A+B+C
GROUP 6	$ 27.46	21.3225+A+B+C

GROUP 7.....$ 27.66 21.3225+A+B+C
GROUP 8.....$ 27.16 21.3225+A+B+C
GROUP 9.....$ 27.41 21.3225+A+B+C
GROUP 10.....$ 27.21 21.3225+A+B+C

FOOTNOTES:

A. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, plus Presidents' Day, Columbus Day, Veteran's Day & V-J Day, providing the employee has worked at least one day in the calendar week in which the holiday falls.

B. Employee who has been on the payroll for 1 year or more but less than 5 years and has worked 150 Days during the last year of employment shall receive 1 week's paid vacation; 5 to 10 years - 2 weeks' paid vacation; 10 or more years - 3 week's paid vacation.

C. Employees on the seniority list shall be paid a one hundred dollar ($100.00) bonus for every four hundred (400) hours worked, up to a maximum of five hundred dollars ($500.00)

All drivers working on a defined hazard material job site shall be paid a premium of $2.00 per hour over applicable rate.

TRUCK DRIVER CLASSIFICATIONS

GROUP 1: Pick-up trucks, station wagons, & panel trucks

GROUP 2: Two-axle on low beds

GROUP 3: Two-axle dump truck

GROUP 4: Three-axle dump truck

GROUP 5: Four- and five-axle equipment

GROUP 6: Low-bed or boom trailer.

GROUP 7: Trailers when used on a double hook up (pulling 2 trailers)

GROUP 8: Special earth-moving equipment, under 35 tons

GROUP 9: Special earth-moving equipment, 35 tons or over

GROUP 10: Tractor trailer

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that

no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests

for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

The contractor shall keep himself informed of and comply with all laws, ordinances and regulations of the federal, state and municipal governments which may apply and be in force during the life of the contract, in any manner which may affect himself/employees or the conduct of the work or the materials used or employed in the work. Before submitting bids, prospective bidders shall examine the terms, covenants and conditions of all codes, permits and laws, which may apply. By submitting a bid, the bidder agrees to comply with all pertinent laws/regulations if awarded a contract.

The IRS Form W-9 attached should be completed and submitted with the bid if the bidder falls under IRS requirements to file this form.

The City is exempt from the payment of the Rhode Island Sales Tax under the 1956 General Laws of the State of Rhode Island, 44-18-30, Paragraph I, as amended.

The successful bidder must comply with all Rhode Island Laws, applicable to public works projects, including, but not limited to provisions of Chapter 13 of Title 37 of the Rhode Island General Laws, pertaining to prevailing wage rates, and all other applicable local, state and federal laws.

Any bid that includes non-approved alternate brands of goods where approval is required, or exception to the specifications or contractual terms of the Invitation to Bid, may be non-responsive and may be rejected.

The Purchasing Agent reserves the right to reject any and all bids, to waive any minor deviations or informalities in the bids received, and to accept the bid deemed most favorable to the interest of the City.

The City reserves the right to terminate the contract or any part of the contract in the best interests of the City, upon 30-day notice to the contractor. The City shall incur no liability for materials or services not yet ordered if it terminates in the best interests of the City. If the City terminates in the interests of the City after an order for materials or services have been placed, the contractor shall be entitled to compensation upon submission of invoices and proper proof of claim, in that proportion which its services and products were satisfactorily rendered or provided, as well as expenses necessarily incurred in the performance of work up to time of termination.

No extra charges for delivery, handling or other services will be honored. All claims for damage in transit shall be the responsibility of the successful bidder. Deliveries must be made during normal working hours unless otherwise agreed upon.

All costs directly or indirectly related to the preparation of a response to this solicitation, or any presentation or communication to supplement and/or clarify any response to this solicitation, which may be required or requested by the City of Warwick shall be the sole responsibility of and shall be borne by the respondent.

If the respondent is awarded a contract in accordance with this solicitation and the respondents bid or response and if the respondent fails or refuses to satisfy fully all of the respondents obligations thereunder, the City of Warwick shall be entitled to recover from the respondent any losses, damages or costs incurred by the City as a result of such failure or refusal.

The City reserves the right to award in part or full and to increase or decrease quantities in the best interest of the City.

Any quantity reference in the bid specifications are estimates only, and do not represent a commitment on the part of the City of Warwick to any level of billing activity. It is understood and agreed that the agreement shall cover the actual quantities ordered during the contract period.

The City reserves the right to rescind award for non-compliance to bid specifications.

The successful bidder must adhere to all City, State and Federal Laws, where applicable.

CITY OF WARWICK

BID AND CONTRACT FORM

Bid #2016-301 Fire Alarm Upgrades and/or Installation Phase V
Fire Stations 2, 5, 8 & 9

I. BID:

WHEREAS, the CITY OF WARWICK has duly asked for bids for performance of services and/or supply of goods in accordance with the above-indicated specifications.

The person or entity below does irrevocably offer to perform the services and/or furnish the goods in accordance with the specifications, which are hereby incorporated by reference in exchange for the bid price below;

This offer shall remain open and irrevocable until the CITY OF WARWICK has accepted this bid or another bid on the specifications or abandoned the project.

The bidder agrees that acceptance below by the CITY OF WARWICK shall transform the bid into a contract. This bid and contract shall be secured by Bonds, if required by the specifications.

Total Lump Sum: $_____

Form **W-9**
(Rev. December 2014)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Give Form to the requester. Do not send to the IRS.

Print or type
See Specific Instructions on page 2.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification; check only **one** of the following seven boxes:
☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate
☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶
Note. For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner.
☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):
Exempt payee code (if any)
Exemption from FATCA reporting code (if any)
(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.)

Requester's name and address (optional)

6 City, state, and ZIP code

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the instructions for line 1 and the chart on page 4 for guidelines on whose number to enter.

Social security number
☐☐☐ – ☐☐ – ☐☐☐☐

or

Employer identification number
☐☐ – ☐☐☐☐☐☐☐

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 3.

Sign Here **Signature of U.S. person ▶** **Date ▶**

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. Information about developments affecting Form W-9 (such as legislation enacted after we release it) is at *www.irs.gov/fw9*.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See *What is backup withholding?* on page 2.

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting?* on page 2 for further information.

Note. If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien;
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;
- An estate (other than a foreign estate); or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

In the cases below, the following person must give Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States:

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity;
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust; and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Publication 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items:

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

Backup Withholding

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 28% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the Part II instructions on page 3 for details),
3. The IRS tells the requester that you furnished an incorrect TIN,
4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or
5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code* on page 3 and the separate Instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships* above.

What is FATCA reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code* on page 3 and the Instructions for the Requester of Form W-9 for more information.

Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account; for example, if the grantor of a grantor trust dies.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of $50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a $500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account, list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9.

a. **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

Note. ITIN applicant: Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040/1040A/1040EZ you filed with your application.

b. **Sole proprietor or single-member LLC.** Enter your individual name as shown on your 1040/1040A/1040EZ on line 1. You may enter your business, trade, or "doing business as" (DBA) name on line 2.

c. **Partnership, LLC that is not a single-member LLC, C Corporation, or S Corporation.** Enter the entity's name as shown on the entity's tax return on line 1 and any business, trade, or DBA name on line 2.

d. **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on line 2.

e. **Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a "disregarded entity." See Regulations section 301.7701-2(c)(2)(iii). Enter the owner's name on line 1. The name of the entity entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on line 2, "Business name/disregarded entity name." If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

Line 3

Check the appropriate box in line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box in line 3.

Limited Liability Company (LLC). If the name on line 1 is an LLC treated as a partnership for U.S. federal tax purposes, check the "Limited Liability Company" box and enter "P" in the space provided. If the LLC has filed Form 8832 or 2553 to be taxed as a corporation, check the "Limited Liability Company" box and in the space provided enter "C" for C corporation or "S" for S corporation. If it is a single-member LLC that is a disregarded entity, do not check the "Limited Liability Company" box; instead check the first box in line 3 "Individual/sole proprietor or single-member LLC."

Line 4, Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space in line 4 any code(s) that may apply to you.

Exempt payee code.

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys' fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)

2—The United States or any of its agencies or instrumentalities

3—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

4—A foreign government or any of its political subdivisions, agencies, or instrumentalities

5—A corporation

6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession

7—A futures commission merchant registered with the Commodity Futures Trading Commission

8—A real estate investment trust

9—An entity registered at all times during the tax year under the Investment Company Act of 1940

10—A common trust fund operated by a bank under section 584(a)

11—A financial institution

12—A middleman known in the investment community as a nominee or custodian

13—A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over $600 required to be reported and direct sales over $5,000[1]	Generally, exempt payees 1 through 5[2]
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

[1] See Form 1099-MISC, Miscellaneous Income, and its instructions.

[2] However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

Exemption from FATCA reporting code. The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) written or printed on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)

B—The United States or any of its agencies or instrumentalities

C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

G—A real estate investment trust

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940

I—A common trust fund as defined in section 584(a)

J—A bank as defined in section 581

K—A broker

L—A trust exempt from tax under section 664 or described in section 4947(a)(1)

M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

Note. You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns.

Line 6

Enter your city, state, and ZIP code.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-member LLC that is disregarded as an entity separate from its owner (see *Limited Liability Company (LLC)* on this page), enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note. See the chart on page 4 for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at *www.ssa.gov*. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at *www.irs.gov/businesses* and clicking on Employer Identification Number (EIN) under Starting a Business. You can get Forms W-7 and SS-4 from the IRS by visiting IRS.gov or by calling 1-800-TAX-FORM (1-800-829-3676).

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note. Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: *A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.*

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if items 1, 4, or 5 below indicate otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code* earlier.

Signature requirements. Complete the certification as indicated in items 1 through 5 below.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account)	The actual owner of the account or, if combined funds, the first individual on the account[1]
3. Custodian account of a minor (Uniform Gift to Minors Act)	The minor[2]
4. a. The usual revocable savings trust (grantor is also trustee)	The grantor-trustee[1]
b. So-called trust account that is not a legal or valid trust under state law	The actual owner[1]
5. Sole proprietorship or disregarded entity owned by an individual	The owner[3]
6. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))	The grantor*
For this type of account:	**Give name and EIN of:**
7. Disregarded entity not owned by an individual	The owner
8. A valid trust, estate, or pension trust	Legal entity[4]
9. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
10. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
11. Partnership or multi-member LLC	The partnership
12. A broker or registered nominee	The broker or nominee
13. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
14. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulations section 1.671-4(b)(2)(i)(B))	The trust

[1] List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

[2] Circle the minor's name and furnish the minor's SSN.

[3] You must show your individual name and you may also enter your business or DBA name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

[4] List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships* on page 2.

*Note. Grantor also must provide a Form W-9 to trustee of trust.

Note. If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records from Identity Theft

Identity theft occurs when someone uses your personal information such as your name, SSN, or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Publication 4535, Identity Theft Prevention and Victim Assistance.

Victims of identity theft who are experiencing economic harm or a system problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes. Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to *phishing@irs.gov*. You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at: *spam@uce.gov* or contact them at *www.ftc.gov/idtheft* or 1-877-IDTHEFT (1-877-438-4338).

Visit IRS.gov to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

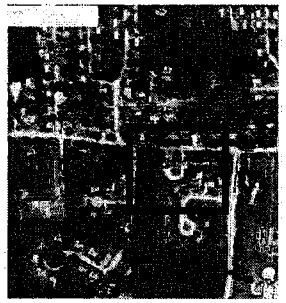
Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

CITY OF WARWICK
FIRE ALARM UPGRADES
PHASE V

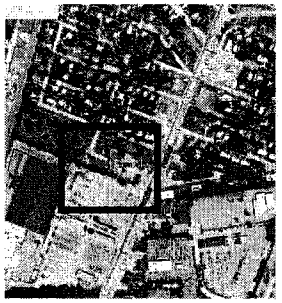
LIST OF DRAWINGS:

COVER	COVER
FA-0.1	GENERAL FIRE ALARM NOTES, LEGEND AND DETAILS
FA-1.0	FIRE STATION 2 - FIRE ALARM NOTES, SEQUENCE, AND RISER DIAGRAM
FA-1.1	FIRE STATION 2 - FIRST FLOOR AND MEZZANINE FIRE ALARM PLAN
FA-2.0	FIRE STATION 5 - FIRE ALARM NOTES, SEQUENCE, RISER DIAGRAM, AND FIRST FLOOR PLAN
FA-3.0	FIRE STATION 8 - FIRE ALARM NOTES, SEQUENCE, AND RISER DIAGRAM
FA-3.1	FIRE STATION 8 - FIRST FLOOR AND MEZZANINE FIRE ALARM PLAN
FA-4.0	FIRE STATION 9 - FIRE ALARM NOTES, SEQUENCE, RISER DIAGRAM, AND FIRST FLOOR PLAN

FIRE STATION 2
771 POST ROAD
WARWICK, RI 02888



FIRE STATION 5
450 COWESETT ROAD
WARWICK, RI 02886



FIRE STATION 8
1651 POST ROAD
WARWICK, RI 02888

FIRE STATION 9
314 COMMONWEALTH AVENUE
WARWICK, RI 02886

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SEAL

IT IS A VIOLATION OF STATE LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DRAWING IN ANY WAY. IF ANY ITEM IS ALTERED, THE ALTERING ENGINEER SHALL WITH TO BE UTILIZED HIS/HER SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS/HER SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

KEY PLAN

NO.	REVISION	DATE

PROJECT
FIRE ALARM UPGRADES - PHASE V

ADDRESS

PROJECT NO
1JJW00218.001

DATE
MARCH 15, 2016

DESIGN
CSB

DRAWN BY
CSB

CHECKED BY
JJW

SCALE
NOT TO SCALE

NOTE: IF DRAWING IS LESS THAN 24"X36" REDUCE GRAPHIC SCALE ACCORDINGLY.

TITLE
COVER

NUMBER
COVER

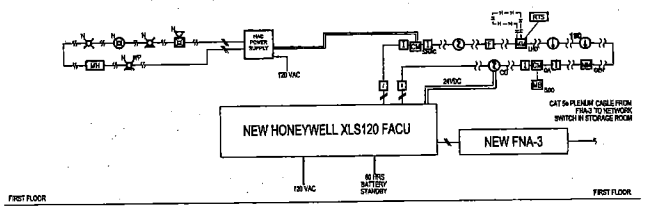
SHEET
1 of 6

BUILDING GENERAL NOTES

1. THE SCOPE OF WORK INCLUDES A COMPLETE REPLACEMENT OF THE EXISTING FIRE ALARM SYSTEM WITH A NEW ADDRESSABLE FIRE ALARM CONTROL UNIT, NEW NOTIFICATION APPLIANCES, NEW ADDRESSABLE DEVICES, NEW SIGNALING LINE CIRCUITS, NEW NOTIFICATION APPLIANCE CIRCUITS, NEW SYSTEM SMOKE DETECTORS IN SLEEPING ROOMS, AND NEW COMBINATION SMOKE/CARBON MONOXIDE DETECTORS, AS SHOWN ON THESE DRAWINGS AND TECHNICAL SPECIFICATIONS. THE CONTRACTOR SHALL DEMOLISH ALL EXISTING FIRE ALARM COMPONENTS IN THE BUILDING EXCEPT EXISTING RADIO MASTERBOX #300. INCLUDED IN THE SCOPE OF WORK IS SCAFFOLDING, STAGING, RIGGING, OR HOISTING NECESSARY TO INSTALL ALL COMPONENTS, AS SHOWN ON THESE DRAWINGS. CONTRACTOR SHALL INSTALL FIRE NETWORK ADAPTER (FNA) IN THE STORAGE ROOM NEAR THE REAR ENTRY. CONTRACTOR SHALL CONNECT THE FNA AND NETWORK SWITCH IN THE STORAGE ROOM VIA MOHAWK CAT5 PLENUM CABLE, PER MANUFACTURER'S REQUIREMENTS. FIRE ALARM CONTROL UNIT AND FNA TO BE CONNECTED VIA TWISTED PAIR WIRE, PER MANUFACTURER'S REQUIREMENTS.
2. FIRE STATION 5 IS CURRENTLY NOT PROVIDED SPRINKLER PROTECTION. THE FIRE ALARM SYSTEM IS DESIGNED UNDER THE CRITERIA THAT THE BUILDING IS NOT SPRINKLERED.
3. FIRE STATION 5 IS REQUIRED BY RILSC SECTION 29.3.4.1.1 TO HAVE A FIRE ALARM SYSTEM INSTALLED. EMERGENCY FORCES NOTIFICATION IS NOT REQUIRED; EXISTING RADIO MASTERBOX #300 TO REMAIN AS INSTALLED. NEW ADDRESSABLE CONTROL MODULES TO BE INSTALLED FOR INITIATING EACH MASTERBOX ZONE, AS IDENTIFIED ON THE SEQUENCE OF OPERATIONS. CONTROL MODULES USED FOR INITIATING MASTERBOX ZONES SHALL BE ISOLATED FROM THE REST OF THE SLC USING FAULT ISOLATION MODULES. EMERGENCY FORCES NOTIFICATION TO BE PROVIDED IN ACCORDANCE WITH RILSC SECTION 9.6.4.2.
4. LINE-TYPE LINEAR HEAT DETECTION TO BE INSTALLED ABOVE ALL ACCESSIBLE CEILINGS GREATER THAN 24 INCHES. LINEAR HEAT DETECTION TO BE MONITORED BY AN ADDRESSABLE MONITOR MODULE ON THE SIGNALING LINE CIRCUIT. LINEAR HEAT DETECTION INSTALLED ABOVE ACCESSIBLE CEILINGS SHALL BE PROTECTOWIRE MODEL PLR-155. LINEAR LENGTH SHALL NOT EXCEED 75% OF THE LISTED RESISTANCE FOR ADDRESSABLE MONITOR MODULE BUT SHALL NOT EXCEED 600 FEET. CONTRACTOR SHALL PROVIDE HANGING AND BRACING IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS. CONTRACTOR SHALL INSTALL KEY REMOTE TEST SWITCH FOR TESTING OF LINEAR HEAT DETECTION MODULE. ALL MONITOR MODULES AND KEY REMOTE TEST SWITCHES TO BE INSTALLED IN ACCESSIBLE LOCATION IN FIRST FLOOR STORAGE ROOM.

RISER DIAGRAM NOTES

1. THE RISER DIAGRAM IS CONCEPTUAL IN NATURE. IT DOES NOT INTEND TO REPRESENT ACTUAL WIRING AND RACEWAY INSTALLATION. ALL CONDUCTORS AND WIRING SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.



CONCEPTUAL PARTIAL RISER DIAGRAM

SCALE: NOT TO SCALE

KEY NOTE

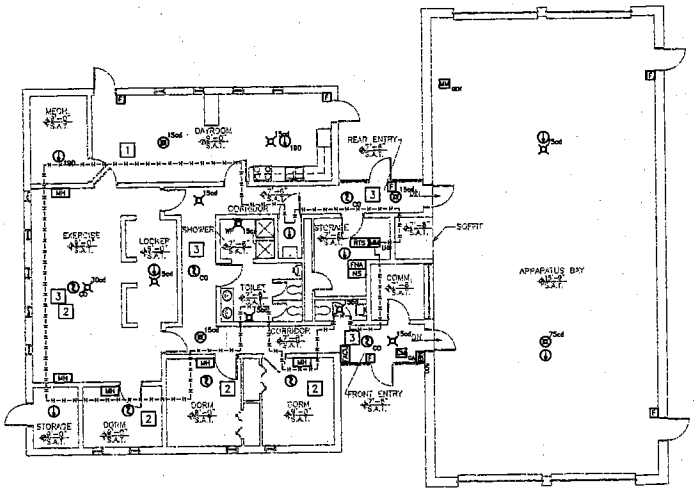
1. LINE-TYPE LINEAR HEAT DETECTION TO BE INSTALLED ABOVE ALL ACCESSIBLE CEILINGS GREATER THAN 24 INCHES. LINEAR HEAT DETECTION TO BE MONITORED BY AN ADDRESSABLE MONITOR MODULE ON THE SIGNALING LINE CIRCUIT. LINEAR HEAT DETECTION INSTALLED ABOVE ACCESSIBLE CEILINGS SHALL BE PROTECTOWIRE MODEL PLR-155. LINEAR LENGTH SHALL NOT EXCEED 75% OF THE LISTED RESISTANCE FOR ADDRESSABLE MONITOR MODULE BUT SHALL NOT EXCEED 600 FEET. CONTRACTOR SHALL PROVIDE HANGING AND BRACING IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS. CONTRACTOR SHALL INSTALL KEY REMOTE TEST SWITCH FOR TESTING OF LINEAR HEAT DETECTION MODULE. ALL MONITOR MODULES AND KEY REMOTE TEST SWITCHES TO BE INSTALLED IN ACCESSIBLE LOCATION IN FIRST FLOOR STORAGE ROOM.
2. SMOKE DETECTOR TO BE PROVIDED IN EACH SLEEPING AREA, AS SHOWN. B200SLF SOUNDER BASE TO BE PROVIDED ON SHOWN SMOKE DETECTOR, UNLESS OTHERWISE NOTED. WHERE SLEEPING AREA DETECTOR IS IN ALARM, A TEMPORAL 3 TONE SHALL BE BROADCAST VIA SOUNDER BASE. 24VDC SUPERVISED, CONSTANT POWER SHALL BE PROVIDED TO ALL SOUNDER BASES. SLEEPING AREA SMOKE DETECTION NOT REQUIRED TO BE INTERCONNECTED PER RILSC SECTION 29.3.4.6.1.
3. COMBINATION SMOKE DETECTOR/CO DETECTOR TO BE PROVIDED B200S SOUNDER BASE, UNLESS OTHERWISE NOTED IN KEY NOTE 2 AND/OR IS IN A SLEEPING UNIT. 24VDC SUPERVISED, CONSTANT POWER SHALL BE PROVIDED TO ALL SOUNDER BASES. WHERE CORRIDOR DETECTION INCORPORATES CO DETECTION, BUILDING NOTIFICATION SHALL INITIATE ON SMOKE DETECTION, BUT TEMPORAL 4 SHALL BE BROADCAST VIA THE SOUNDER BASE OF THE DETECTOR ON CO DETECTION.

FIRE ALARM OPERATIONS MATRIX

SYSTEM INPUTS	REQUIRED SYSTEM OUTPUTS: ANNUNCIATION AND INDICATION						OFF PREMISES SIGNAL TRANSMISSION		ANCILLARY FUNCTIONS					
	ACTUATE AUDIBLE INTERIOR FIRE ALARM NOTIFICATION APPLIANCES	ACTUATE EXTERIOR AUDIBLE ALARM INDICATOR (FLASHING)	ACTUATE SUPERVISORY SUPERVISORY INDICATOR (FLASHING)	ACTUATE AUDIBLE/VISUAL TROUBLE INDICATOR (FLASHING)	PROVIDE SUPERVISED CIRCUIT INDICATOR (FLASHING)	TRANSMIT ALARM SIGNAL TO MONITOR FIRE DEPARTMENT VIA SYSTEM RADIO MASTERBOX	TRANSMIT CONNECTION TO CITY OF WARWICK VIA NORTHEAST FIRE NETWORK ADAPTER	TRANSFER FIRE ALARM SYSTEM TO SECONDARY POWER	BROADCAST TEMPORAL 3 ALARM SIGNAL AT SPEAKER OR SOUNDER BASE VIA SOUNDER BASE	BROADCAST TEMPORAL 4 ALARM SIGNAL AT SPEAKER OR SOUNDER BASE VIA SOUNDER BASE				
ALARM SIGNALS														
MANUAL FIRE ALARM BOX	●	●			●		●	●						
AUTOMATIC DETECTION DEVICE (HEAT OR SMOKE DETECTOR) INITIATION	●	●			●		●	●						
LINEAR HEAT DETECTION	●	●			●		●	●						
SUPERVISORY SIGNALS														
TRANSFER TO EMERGENCY POWER			●		●			●						
SLEEPING AREA SMOKE DETECTOR ACTIVATION			●		●			●			●			
COMBINATION SMOKE/CO DETECTOR CO ALARM ACTIVATION			●		●			●				●		
TROUBLE SIGNALS														
OPEN CIRCUIT (SEE NOTE 2)				●	●			●						
CIRCUIT GROUND FAULT (SEE NOTE 1)				●	●			●						
AC POWER FAILURE (SEE NOTE 1)				●	●			●			●			

NOTE 1: SYSTEM SHALL REMAIN OPERATIONAL DURING FAULT.
NOTE 2: NOTIFICATION APPLIANCE CIRCUITS SHALL REMAIN OPERATIONAL.

SEQUENCE OF OPERATIONS



1 **FIRST FLOOR FIRE ALARM PLAN**

SCALE: 1/8" = 1'-0"

0 4' 8' 16'
1/8" = 1'-0"

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SEAL: JOSEPH J. MARON No. 5526 REGISTERED PROFESSIONAL ENGINEER FIRE PROTECTION

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KEY PLAN

NO.	REVISION	DATE

PROJECT: FIRE ALARM UPGRADES - PHASE V FIRE STATION 5

ADDRESS: 450 COWESETT ROAD WARWICK, RI

PROJECT NO: 1JJW00218.001

DATE: MARCH 15, 2016

DESIGN: CSB

DRAWN BY: CSB

CHECKED BY: JJW

SCALE: 0 4' 8' 16' 1/8" = 1'-0"

NOTE: IF DRAWING IS LESS THAN 24" X 36" REDUCE GRAPHIC SCALE ACCORDINGLY.

TITLE: FIRE ALARM NOTES, SEQUENCE, RISER DIAGRAM, AND FIRST FLOOR PLANS

NUMBER: FA-2.0

SHEET: 3 of 6

FIRE ALARM OPERATIONS MATRIX

SYSTEM INPUTS	REQUIRED SYSTEM OUTPUTS: ANNUNCIATION AND INDICATION								OFF PREMISES SIGNAL TRANSMISSION				ANCILLARY FUNCTIONS	
	ACTUATE AUDIBLE AND VISIBLE FIRE ALARM NOTIFICATION APPLIANCES	ACTUATE AUDIBLE/VISIBLE FLOW INDICATION AT FACU	ACTUATE AUDIBLE/VISIBLE SUPERVISORY INDICATION AT FACU	ACTUATE AUDIBLE/VISIBLE TROUBLE INDICATION AT FACU	PROVIDE SUPERVISORY INDICATION AT FACU	TRANSMIT SIGNAL ALARM SIGNAL TO MONITOR FIRE DEPARTMENT VIA DEDICATED PATH	TRANSMIT SIGNAL TO MONITOR FIRE DEPARTMENT VIA DEDICATED PATH	TRANSMIT ALARM SIGNAL TO MONITOR FIRE DEPARTMENT VIA DEDICATED PATH	TRANSMIT SUPERVISORY SIGNAL TO MONITOR FIRE DEPARTMENT VIA DEDICATED PATH	TRANSMIT TROUBLE SIGNAL TO MONITOR FIRE DEPARTMENT VIA DEDICATED PATH	TRANSFER FIRE ALARM SYSTEM TO SECONDARY POWER	SHUTDOWN ALL SUPPLY AND RETURN AIR HANDLING UNITS DETECTOR ACTIVATION	SHUTDOWN ALL SUPPLY AND RETURN AIR HANDLING UNITS DUCT DETECTOR ACTIVATION	BROADCAST TEMPORAL 3 ALARM SIGNAL AT SPECIFIC DETECTOR ONLY VIA COMMON BASE	BROADCAST TEMPORAL ALARM SIGNAL AT SPECIFIC DETECTOR ONLY VIA COMMON BASE
ALARM SIGNALS														
MANUAL FIRE ALARM BOX	●	●			●	●		●				●		
AUTOMATIC DETECTION DEVICE (HEAT OR SMOKE DETECTOR) INITIATION	●	●			●	●		●				●		
SPRINKLER WATERFLOW DEVICE	●	●			●		●	●				●		
SUPERVISORY SIGNALS														
TRANSFER TO EMERGENCY POWER			●		●			●						
VALVE SUPERVISORY SWITCH			●		●			●						
DUCT DETECTOR ACTIVATION			●		●			●			●			
SLEEPING AREA SMOKE DETECTOR ACTIVATION			●		●			●					●	
COMBINATION SMOKE/CO DETECTOR CO ALARM ACTIVATOR			●		●			●						●
TROUBLE SIGNALS														
OPEN CIRCUIT (SEE NOTE 2)				●	●			●						
CIRCUIT GROUND FAULT (SEE NOTE 1)				●	●			●						
AC POWER FAILURE (SEE NOTE 1)				●	●			●		●				

NOTE 1: SYSTEM SHALL REMAIN OPERATIONAL DURING FAULT.
NOTE 2: NOTIFICATION APPLIANCE CIRCUITS SHALL REMAIN OPERATIONAL.

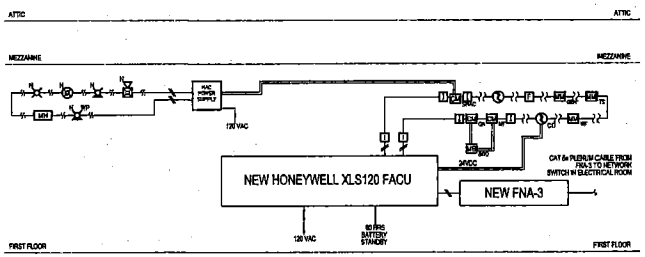
SEQUENCE OF OPERATIONS

BUILDING GENERAL NOTES

1. THE SCOPE OF WORK INCLUDES A COMPLETE REPLACEMENT OF THE EXISTING FIRE ALARM SYSTEM WITH A NEW ADDRESSABLE FIRE ALARM CONTROL UNIT, NEW NOTIFICATION APPLIANCES, NEW ADDRESSABLE DEVICES, NEW SIGNALING LINE CIRCUITS, NEW NOTIFICATION APPLIANCE CIRCUITS, NEW SYSTEM SMOKE DETECTORS IN SLEEPING ROOMS, AND NEW COMBINATION SMOKE/CARBON MONOXIDE DETECTORS, AS SHOWN ON THESE DRAWINGS AND TECHNICAL SPECIFICATIONS. THE CONTRACTOR SHALL DEMOLISH ALL EXISTING FIRE ALARM COMPONENTS IN THE BUILDING EXCEPT EXISTING RADIO MASTERBOX #800. INCLUDED IN THE SCOPE OF WORK IS SCAFFOLDING, STAGING, RIGGING, OR HOISTING NECESSARY TO INSTALL ALL COMPONENTS, AS SHOWN ON THESE DRAWINGS. CONTRACTOR SHALL INSTALL FIRE NETWORK ADAPTER (FNA) IN REAR ELECTRICAL ROOM. CONTRACTOR SHALL CONNECT THE FNA AND NETWORK SWITCH IN THE ELECTRICAL ROOM VIA MOHAWK CAT6 PLENUM CABLE, PER MANUFACTURERS REQUIREMENTS. FIRE ALARM CONTROL UNIT AND FNA TO BE CONNECTED VIA TWISTED PAIR WIRE, PER MANUFACTURER'S REQUIREMENTS.
2. FIRE STATION 8 IS CURRENTLY PROVIDED SPRINKLER PROTECTION. THE FIRE ALARM SYSTEM IS DESIGNED UNDER THE CRITERIA THAT THE BUILDING IS SPRINKLERED THROUGHOUT.
3. FIRE STATION 8 IS REQUIRED BY RLSC SECTION 26.3.4.1.1 TO HAVE A FIRE ALARM SYSTEM INSTALLED. EMERGENCY FORCES NOTIFICATION IS NOT REQUIRED; EXISTING RADIO MASTERBOX #800 TO REMAIN AS INSTALLED. NEW ADDRESSABLE CONTROL MODULES TO BE INSTALLED FOR INITIATING EACH MASTERBOX ZONE, AS IDENTIFIED ON THE SEQUENCE OF OPERATIONS. CONTROL MODULES USED FOR INITIATING MASTERBOX ZONES SHALL BE ISOLATED FROM THE REST OF THE SLC USING FAULT ISOLATION MODULES. EMERGENCY FORCES NOTIFICATION TO BE PROVIDED IN ACCORDANCE WITH RLSC SECTION 9.6.4.2.

RISER DIAGRAM NOTES

1. THE RISER DIAGRAM IS CONCEPTUAL IN NATURE. IT DOES NOT INTEND TO REPRESENT ACTUAL WIRING AND RACEWAY INSTALLATION. ALL CONDUCTORS AND WIRING SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.



CONCEPTUAL PARTIAL RISER DIAGRAM

SCALE: NOT TO SCALE

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SEAL: JOSEPH A. WASSON, No. 8326, REGISTERED PROFESSIONAL ENGINEER, FIRE PROTECTION

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KEY PLAN

NO.	REVISION	DATE

PROJECT: FIRE ALARM UPGRADES - PHASE V
FIRE STATION 8

ADDRESS: 1551 POST ROAD, WARWICK, RI

PROJECT NO: 5JJW00218.001

DATE: MARCH 15, 2018

DESIGN: CSB

DRAWN BY: CSB

CHECKED BY: JJW

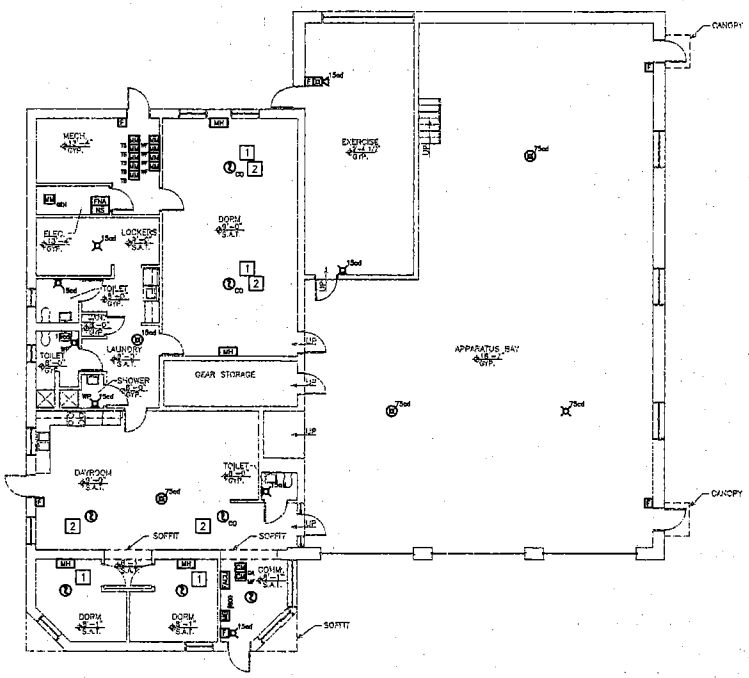
SCALE: 0 4' 8' 16' — 1/8"=1'-0"

NOTE: IF DRAWING IS LESS THAN 24" X 36" REDUCE GRAPHIC SCALE ACCORDINGLY.

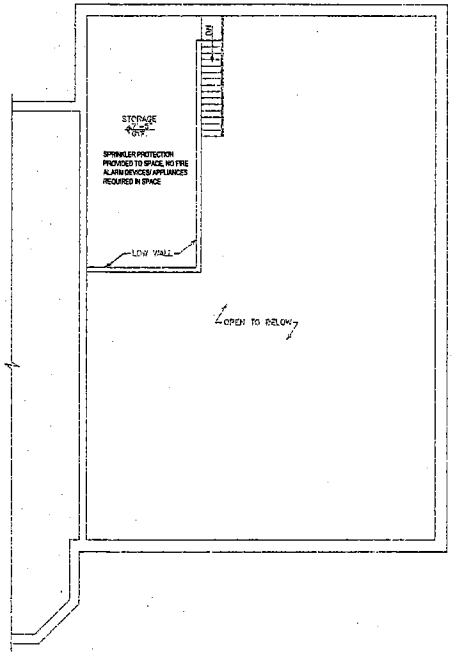
TITLE: FIRE ALARM NOTES, SEQUENCE AND RISER DIAGRAM

NUMBER: FA-3.0

SHEET: 6 of 6



1 **FIRST FLOOR FIRE ALARM PLAN**
SCALE: 1/8" = 1'-0"



2 **MEZZANINE FIRE ALARM PLAN**
SCALE: 1/8" = 1'-0"

KEY NOTES

1. SMOKE DETECTOR TO BE PROVIDED IN EACH SLEEPING AREA, AS SHOWN. 9202SLF SOUNDER BASE TO BE PROVIDED ON SHOWN SMOKE DETECTOR, UNLESS OTHERWISE NOTED. WHERE SLEEPING AREA DETECTOR IS IN ALARM, A TEMPORAL 3 TONE SHALL BE BROADCAST VIA SOUNDER BASE. 24VDC SUPERVISED, CONSTANT POWER SHALL BE PROVIDED TO ALL SOUNDER BASES. SLEEPING AREA SMOKE DETECTION NOT REQUIRED TO BE INTERCONNECTED PER NLSC SECTION 26.2.4.3.1.

2. COMBINATION SMOKE DETECTOR/CO DETECTOR TO BE PROVIDED 9202S SOUNDER BASE, UNLESS OTHERWISE NOTED IN KEY NOTE 1 AND/OR IS IN A SLEEPING UNIT. 24VDC SUPERVISED, CONSTANT POWER SHALL BE PROVIDED TO ALL SOUNDER BASES. WHERE CORRIDOR DETECTION INCORPORATES CO DETECTION, BUILDING NOTIFICATION SHALL INITIATE ON SMOKE DETECTION, BUT TEMPORAL 4 SHALL BE BROADCAST VIA THE SOUNDER BASE OF THE DETECTOR ON CO DETECTION.

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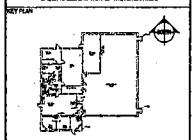
SEAL

JOSEPH J. WATSON
No. 8528
REGISTERED PROFESSIONAL ENGINEER FIRE PROTECTION

IT IS A VIOLATION OF STATE LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DRAWING IN ANY WAY. IF ANTIBM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS/HER SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS/HER SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

KEY PLAN



NO.	REVISION	DATE

PROJECT
FIRE ALARM UPGRADES - PHASE V
FIRE STATION 8

ADDRESS
1651 POST ROAD
WARWICK, RI

PROJECT NO
1JJW00218.001

DATE
MARCH 15, 2016

DESIGN
CSB

DRAWN BY
CSB

CHECKED BY
JJW

SCALE 0 4' 8' 16'
1/8"=1'-0"
NOTE: IF DRAWING IS LESS THAN 24" X 36" REDUCE GRAPHIC SCALE ACCORDINGLY.

TITLE
FIRST FLOOR AND MEZZANINE FIRE ALARM PLANS

NUMBER
FA-3.1

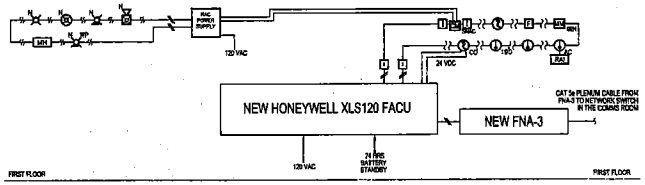
SHEET
7 of 8

BUILDING GENERAL NOTES

1. THE SCOPE OF WORK INCLUDES A COMPLETE REPLACEMENT OF THE EXISTING FIRE ALARM SYSTEM WITH A NEW ADDRESSABLE FIRE ALARM CONTROL UNIT, NEW NOTIFICATION APPLIANCES, NEW ADDRESSABLE DEVICES, NEW SIGNALING LINE CIRCUITS, NEW NOTIFICATION APPLIANCE CIRCUITS, NEW SYSTEM SMOKE DETECTORS IN SLEEPING ROOMS, AND NEW COMBINATION SMOKE/CARBON MONOXIDE DETECTORS, AS SHOWN ON THESE DRAWINGS AND TECHNICAL SPECIFICATIONS. THE CONTRACTOR SHALL DEMOLISH ALL EXISTING FIRE ALARM COMPONENTS IN THE BUILDING. INCLUDED IN THE SCOPE OF WORK IS SCAFFOLDING, STAGING, RIGGING, OR HOISTING NECESSARY TO INSTALL ALL COMPONENTS, AS SHOWN ON THESE DRAWINGS. CONTRACTOR SHALL INSTALL FIRE NETWORK ADAPTER (FNA) IN THE STORAGE ROOM NEAR THE REAR ENTRY. CONTRACTOR SHALL CONNECT THE FNA AND NETWORK SWITCH IN THE STORAGE ROOM VIA MOHAWK CAT5 PLENUM CABLE, PER MANUFACTURER'S REQUIREMENTS. FIRE ALARM CONTROL UNIT AND FNA TO BE CONNECTED VIA TWISTED PAIR WIRE, PER MANUFACTURER'S REQUIREMENTS.
2. FIRE STATION 9 IS CURRENTLY NOT PROVIDED SPRINKLER PROTECTION. THE FIRE ALARM SYSTEM IS DESIGNED UNDER THE CRITERIA THAT THE BUILDING IS NOT SPRINKLERED.
3. FIRE STATION 9 IS REQUIRED BY RILSC SECTION 26.3.4 1.1 TO HAVE A FIRE ALARM SYSTEM INSTALLED. EMERGENCY FORCES NOTIFICATION IS NOT REQUIRED; ALL FIRE ALARM BOXES SHALL BE MARKED TO INDICATE "IN CASE OF EMERGENCY, PULL HANDLE, THEN CALL 9-1-1."
4. ADDRESSABLE HEAT DETECTORS SHALL BE INSTALLED ABOVE ALL ACCESSIBLE CEILINGS GREATER THAN 24 INCHES.

RISER DIAGRAM NOTES

1. THE RISER DIAGRAM IS CONCEPTUAL IN NATURE. IT DOES NOT INTEND TO REPRESENT ACTUAL WIRING AND RACEWAY INSTALLATION. ALL CONDUCTORS AND WIRING SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.



CONCEPTUAL PARTIAL RISER DIAGRAM

SCALE: NOT TO SCALE

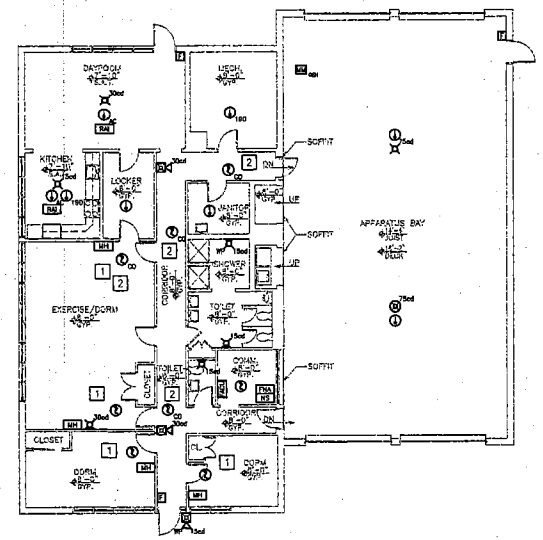
KEY NOTES

1. SMOKE DETECTOR TO BE PROVIDED IN EACH SLEEPING AREA, AS SHOWN. B200SF SOUNDER BASE TO BE PROVIDED ON SHOWN SMOKE DETECTOR, UNLESS OTHERWISE NOTED. WHERE SLEEPING AREA DETECTOR IS IN ALARM, A TEMPORAL 3 TONE SHALL BE BROADCAST VIA SOUNDER BASE. 24VDC SUPERVISED, CONSTANT POWER SHALL BE PROVIDED TO ALL SOUNDER BASES. SLEEPING AREA SMOKE DETECTION NOT REQUIRED TO BE INTERCONNECTED PER RILSC SECTION 26.3.4.3.1
2. COMBINATION SMOKE DETECTOR/CO DETECTOR TO BE PROVIDED B200S SOUNDER BASE, UNLESS OTHERWISE NOTED IN KEY NOTE 1 AND/OR IS IN A SLEEPING UNIT. 24VDC SUPERVISED, CONSTANT POWER SHALL BE PROVIDED TO ALL SOUNDER BASES. WHERE CORRIDOR DETECTION INCORPORATES CO DETECTION, NUILDING NOTIFICATION SHALL INITIATE ON SMOKE DETECTION, BUT TEMPORAL 4 SHALL BE BROADCAST VIA THE SOUNDER BASE OF THE DETECTOR ON CO DETECTION.

FIRE ALARM OPERATIONS MATRIX	REQUIRED SYSTEM OUTPUTS																
	ANNUNCIATION AND INDICATION							OFF PREMISES SIGNAL TRANSMISSION						ANCILLARY FUNCTIONS			
SYSTEM INPUTS	ACTIVATE SMOKE/CO DETECTOR ALARM NOTIFICATION APPLIANCES	ACTIVATE STROBE/SMOKE ALARM INDICATION AT FACU	ACTIVATE AUDIBLE/STROBE SUPERVISORY INDICATION AT FACU	ACTIVATE AUDIBLE/STROBE TROUBLE INDICATION AT FACU	PROVIDE SPEAKER/OUT INDICATION AT FACU	TRANSMIT CONDITION OUTPUT VIA NAMCO/ HONEYWELL FNA NETWORK ADAPTER		TRANSFER THE ALARM SIGNAL TO SECONDARY PHONES	BROADCAST TEMPORAL 3 ALARM SIGNAL AT SMOKE DETECTOR VIA THE SOUNDER BASE	BROADCAST TEMPORAL 4 ALARM SIGNAL AT SMOKE DETECTOR ONLY VIA SOUNDER BASE							
ALARM SIGNALS																	
MANUAL FIRE ALARM BOX	●	●			●			●									
AUTOMATIC DETECTION DEVICE (HEAT OR SMOKE DETECTOR) INITIATION	●	●			●			●									
SUPERVISORY SIGNALS																	
TRANSFER TO EMERGENCY POWER			●		●			●									
SLEEPING AREA SMOKE DETECTOR ACTIVATION			●		●			●				●					
COMBINATION SMOKE/CO DETECTOR CO ALARM ACTIVATION			●		●			●					●				
TROUBLE SIGNALS																	
OPEN CIRCUIT (SEE NOTE 2)				●	●			●									
CIRCUIT GROUND FAULT (SEE NOTE 1)				●	●			●									
AC POWER FAILURE (SEE NOTE 1)				●	●			●			●						

NOTE 1: SYSTEM SHALL REMAIN OPERATIONAL DURING FAULT.
NOTE 2: NOTIFICATION APPLIANCE CIRCUITS SHALL REMAIN OPERATIONAL.

SEQUENCE OF OPERATIONS



1 **FIRST FLOOR FIRE ALARM PLAN**

SCALE: 1/8" = 1'-0"

0 4' 8' 16'
1/8"=1'-0"

JENSEN HUGHES
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SEAL
JOSEPH J. WATSON
No. 8528
REGISTERED PROFESSIONAL ENGINEER
FIRE PROTECTION

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KEY PLAN

NO.	REVISION	DATE

PROJECT
FIRE ALARM UPGRADES - PHASE V
FIRE STATION 9

ADDRESS
314 COMMONWEALTH AVENUE
WARWICK, RI

PROJECT NO
1JJW00218.001

DATE
MARCH 15, 2016

DESIGN
CSB

DRAWN BY
CSB

CHECKED BY
JJW

SCALE
0 4' 8' 16'
1/8"=1'-0"
NOTE: IF DRAWING IS LESS THAN 24" X 36" REDUCE GRAPHIC SCALE ACCORDINGLY.

TITLE
FIRE ALARM NOTES, SEQUENCE, RISER DIAGRAM, AND FIRST FLOOR PLANS

NUMBER
FA-4.0

SHEET
8 of 8

WARWICK MUNICIPAL BUILDINGS
WARWICK FIRE STATION 2, FIRE STATION 5, FIRE STATION 8 AND FIRE STATION 9
WARWICK, RHODE ISLAND

FIRE ALARM UPGRADE PROJECT

Project Manual

PREPARED BY:

JENSEN HUGHES
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WARWICK, RI 02886

PHONE – (401) 736-8992
FAX – (401) 736-8929

MARCH 15, 2016

SECTION 00010 - TABLE OF CONTENTS

INTRODUCTORY INFORMATION

00010 Table of Contents
00015 List of Drawings

BIDDING AND CONTRACT REQUIREMENTS

See Attached Bidding Packet Provided by the City of Warwick

1.0 SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS

01100 Summary of Work
01200 Price and Payment Procedures
01300 Administrative Procedures
01330 Submittal Procedures
01400 Quality Requirements
01500 Temporary Facilities and Controls
01600 Product Requirements
01700 Execution Requirements
01780 Closeout Submittals

DIVISION 2 – SITE CONSTRUCTION

DIVISION 3 – CONCRETE

DIVISION 4 – MASONRY

DIVISION 5 – METALS

DIVISION 6 – WOOD AND PLASTIC

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

07840 Through-Penetration Firestop Systems

DIVISION 8 – DOORS AND WINDOWS

DIVISION 9 – FINSIHES

DIVISION 10 – SPECIALTIES

DIVISION 11 – EQUIPMENT

DIVISION 12 – FURNISHINGS

DIVISION 13 – SPECIAL CONSTRUCTION

DIVISION 14 – CONVEYING SYSTEMS

DIVISION 15 – MECHANICAL

DIVISION 16 – ELECTRICAL

16720 Addressable Fire Alarm System

END OF SECTION 00010

SECTION 00015 - LIST OF DRAWINGS

Drawing No.	Drawing Title
COVER	COVER
FA-0.1	GENERAL FIRE ALARM NOTES, LEGEND AND DETAILS
FA-1.0	FIRE STATION 2 – NOTES, SEQUENCE, AND RISER DIAGRAM
FA-1.1	FIRE STATION 2 – FIRST FLOOR AND MEZZANINE FIRE ALARM PLANS
FA-2.0	FIRE STATION 5 – NOTES, SEQUENCE, RISER DIAGRAM, AND FIRST FLOOR PLAN
FA-3.0	FIRE STATION 8 – NOTES, SEQUENCE, AND RISER DIAGRAM
FA-3.1	FIRE STATION 8 – FIRST FLOOR AND MEZZANINE FIRE ALARM PLANS
FA-4.0	FIRE STATION 9 – NOTES, SEQUENCE, RISER DIAGRAM, AND FIRST FLOOR PLAN

END OF SECTION 00015

SECTION 01100 - SUMMARY OF WORK

1.0 GENERAL

1.1 SECTION INCLUDES

A. Contract description.

B. Work by Contractor.

C. Work under other Contracts.

D. Owner supplied products.

E. Use of Premises.

F. Contractor Use of Premises.

G. Work Restrictions.

H. Work sequence.

I. Owner occupancy.

1.2 CONTRACT DESCRIPTION

A. Work of the Project includes the installation of a fire alarm system throughout the Warwick Police Department. No sprinkler work is to be completed under this Contract.

B. Perform the Work of the building under a single Contract under a stipulated sum Contract with the Owner in accordance with the Conditions of Contract.

C. Project will be constructed under a single prime contract.

1.3 WORK BY CONTRACTOR

A. The Work under this Contract includes:
   1. Install a new municipally-connected analog-addressable fire alarm system throughout each of the following buildings:
      a) Fire Station 5 (450 Cowesett Road)
      b) Fire Station 8 (1651 Post Road)
   2. Install a new local analog-addressable fire alarm system throughout each of the following buildings:
      a) Fire Station 2 (771 Post Road)
      b) Fire Station 9 (314 Commonwealth Avenue)
   3. Demolish and completely remove all existing fire alarm notification appliances, detection devices and control equipment. Existing wiring and conduit shall be demolished and

removed. Existing Masterbox #500 and #800 in Fire Station 5 and Fire Station 8, respectively, to remain as installed.

4. Coordinate and provide monitoring and/or control functions of all HVAC, emergency generators, etc., as shown in the Sequence of Operations of each building.
5. Provide miscellaneous fire alarm devices, appliances, and equipment as shown on the Contract Documents including but not limited control modules, monitor modules, and weatherproof appliances.
6. All staging, hoisting, and scaffolding necessary to complete the scope of work, as shown on Contract Documents and detailed in this specification. Work includes coordination between trades of all staging, hoisting and scaffolding.
7. Work includes cutting, painting and patching of ceilings. Hard ceilings shall be returned to the original condition and to the satisfaction of the owner. The Contractor shall remove, store and reinstall all acoustic ceiling tiles removed for the completion of work. Any ceiling tiles damaged by the Contractor shall be replaced at no expense to the Owner. Fire Alarm conduit shall be installed above finished ceilings where practical or as indicated on Contract Documents. Approved MC Cable may be used above accessible ceilings.
8. Work includes installing a new Honeywell fire network adapter in the building. Fire network adapter to be installed in location noted on Contract Documents. Work includes installing new CAT5e plenum cable from the existing network switch to the fire network adapter in each building. Twisted pair shall be run from fire alarm control unit to the fire network adapter in each building, per manufacturer's requirements. Contractor shall provide 24VDC to new fire network adapter.
9. Included in the scope of work is the programming of the fire alarm control unit and the Honeywell Enterprise Building Integrator. Addressable points for the Honeywell Enterprise Building Integrator were added under a previous contract. Phase V does not require the purchase of additional addressable points. All addressable points for the City of Warwick Fire Alarm Upgrades Phase V shall be used from addressable points purchased in the previous Phase IV contract. The Contractor shall notify the Owner and Engineer where an insufficient number of addressable points are available in the City of Warwick's total addressable points.
10. Preparation of shop drawings, product data, calculations, record drawings, and closeout documents in accordance with these Contract Documents.
11. Provide through-penetration firestopping to all penetrations of the building construction (e.g., walls, floors, ceilings, etc.).
12. Demolition and removal of all existing fire alarm control equipment, devices, and notification appliances, except existing radio Masterbox and associated wiring.
13. Testing of all new equipment indicated in the Contract Documents. Contractor shall perform a Pre-Test, Engineers Pre-Acceptance Test and Final Acceptance Testing with the Warwick Fire Department.
14. All other items described in the Contract Documents.

1.4 WORK UNDER OTHER CONTRACTS

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.

1.5 OWNER SUPPLIED PRODUCTS

A. Owner's Responsibilities:
   1. Arrange for and deliver Owner-reviewed Shop Drawings, Product Data, and Samples, to the Contractor.
   2. On delivery, inspect products jointly with the Contractor.
   3. Arrange for manufacturers' warranties, inspections, and service.

B. Contractor's Responsibilities:
   1. Review Owner-reviewed Shop Drawings, Product Data, and Samples.
   2. Receive and unload products at the site; inspect for completeness or damage jointly with the Owner.
   3. Handle, store, install and finish products.
   4. Repair or replace items damaged after receipt.

1.6 USE OF PREMISES

A. Contractor shall have limited use of premises for construction operations as indicated on the Contract Documents.

B. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
   1. Limits: Confine construction operations to areas indicated on Drawings by Contract limits.
   2. Owner Occupancy: Owner will occupy Project Site during construction
   3. Driveways and Entrances: Keep driveways loading areas and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
      a. Schedule deliveries to minimize use of building entrances and driveways
      b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Use of Existing Building: Maintain existing building in a weather tight condition throughout construction period. Repair damage caused by construction operations. Protect building during construction period.

1.7 CONTRACTOR USE OF PREMISES

A. Limit use of premises for Work and for construction operations, to allow for work by other Contractors.

B. Limit access to site as directed by Owner's Representative.

1.8 WORK RESTRICTIONS

A. On-site Work Hours: Work shall be generally performed inside the existing building during normal business working hours of 7:00 a.m. to 3:00 p.m., Monday through Friday, except otherwise indicated.
   1. Weekend Hours: As approved by Owner in advance.

2. Early Morning and nighttime Hours: As approved by Owner in advance.
3. Hours for Utility Shutdowns: As approved by Owner in advance.
4. Hours for Core Drilling and Saw Cutting: As approved by Owner in advance.
5. Coordinate work during any limited work periods with Owner.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
1. Notify Engineer and Owner not less than 3 days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Owner's written permission.

1.9 WORK SEQUENCE

A. Construct the Work to accommodate the Owner's occupancy requirements. Coordinate the construction schedule and operations with the Owner and Engineer. It is expected that working area may vary throughout the week.

1.10 OWNER OCCUPANCY

A. The Owner intends for the building to be occupied throughout construction.

B. Cooperate with the Owner to minimize conflict, and to facilitate the Owner's operations.

C. Schedule the Work to accommodate Owner occupancy.

2.0 PRODUCTS

Not Used.

3.0 EXECUTION

Not Used.

END OF SECTION 01100

SECTION 01200 - PRICE AND PAYMENT PROCEDURES

1.0 GENERAL

1.1 SECTION INCLUDES

A. Cash or Quantity allowances.

B. Contingency allowances.

C. Schedule of values.

D. Applications for payment.

E. Warranty inspection retainage.

F. Sales tax exemption.

G. Change procedures.

H. Defect assessment.

I. Unit prices.

J. Alternates.

1.2 CONTINGENCY ALLOWANCES

A. The project does not include a contingency allowance.

1.3 SCHEDULE OF VALUES

A. Submit a printed schedule on AIA Form G703 - Application and Certificate for Payment Continuation Sheet

B. Submit Schedule of Values in duplicate, one copyrighted original and one copy, within fifteen (15) days after date of receipt of a Purchase Order from the City of Warwick, Purchasing Division.

C. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the major specification Section. Organize the Schedule of Values by trade and to reflect the general organization of the work. The Schedule of values and the Project Schedule must reflect each other in organization and break down.

D. Include in each line item, the amount of Allowances specified in this Section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.

E. Include in the schedule of Values the following Specific Line Items:

1.02 Mobilization
1.03 Demobilization
1.04 Builder's Risk Insurance
1.05 Bond
1.06 Shop Drawings and Submittal
1.07 Scheduling
1.08 Preconstruction Survey
1.09 Daily Clean up in the building
1.10 Site Clean up
1.11 Safety Compliance
1.12 Monthly Progress Drawing updates
1.13 Dumpsters / Trash removal
1.14 Labor
1.15 Material
1.16 Testing Allowance
1.17 Contingency Allowance
1.18 Any other Allowances from the Bid Form
1.19 Warrantee Retainage
1.20 As built Drawings
1.21 Project Close out (Beyond As built Drawings)

F. Revise schedule to list approved Change Orders, with each Application for Payment.

1.4 APPLICATIONS FOR PAYMENT

A. Submit each application on an original copyrighted AIA Form G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet, accompanied by three (3) copies.
   1. Individually sign and notarize, and emboss with notary's official seal, the original and each of the three (3) copies.
   2. Applications not including original copyrighted AIA G702, and G703 Forms, will be rejected, and returned for re-submittal.
   3. Applications not properly signed and notarized will be rejected, and returned for re-submittal.

B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.

C. Provide one (1) hard copy and one (1) copy in disc form of the updated construction schedule with each Application for Payment submission.
   1. Provide a statement signed by the Contractor's firm principal certifying that there are no unidentified outstanding claims for delay.

D. Include with each monthly Application for Payment, following the first application, one (1) copy of the Certified Monthly Payroll Record for the previous month's pay period.

E. Payment Period: Submit at intervals stipulated in the Agreement.

F. Submit with transmittal letter as specified for Submittals in Section 01330.

G. Substantiating Data: When the Engineer requires substantiating information, submit data justifying dollar amounts in question. Include the following with the Application for Payment:
   1. Record Documents as specified in Section 01780, for review by the Owner which will be returned to the Contractor.
   2. Affidavits attesting to off-site stored products.
   3. Construction progress schedules, revised and current as specified in Section 01330.

1.5 SALES TAX EXEMPTION

A. Owner is exempt from sales tax on products permanently incorporated in Work of the Project.
   1. Obtain sales tax exemption certificate number from Owner.
   2. Place exemption certificate number on invoice for materials incorporated in the Work of the Project.
   3. Furnish copies of invoices to Owner.
   4. Upon completion of Work, file a notarized statement with Owner that all purchases made under exemption certificate were entitled to be exempt.
   5. Pay legally assessed penalties for improper use of exemption certificate number.

1.6 CHANGE PROCEDURES

A. Submittals: Submit name of the individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

B. The Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum or Contract Time by issuing supplemental instructions on AIA Form G710

C. The Engineer may issue a Proposal Request which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required, and the period of time during which the requested price will be considered valid. Contractor will prepare and submit an estimate within fifteen (15) days.

D. The Contractor may propose changes by submitting a request for change to the Engineer, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation, and a statement describing the effect on Work by separate or other Contractors. Document any requested substitutions in accordance with Section 01600.

E. Stipulated Sum Change Order: Based on Proposal Request, and Contractor's fixed price quotation, or Contractor's request for a Change Order as approved by Engineer.

F. Unit Price Change Order: For contract unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of work which are not pre-determined, execute the Work under a Construction Change Directive. Changes in

the Contract Sum or Contract Time will be computed as specified for a Time and Material Change Order.

G. Construction Change Directive: The Engineer may issue a directive, on AIA Form G713 Construction Change Directive signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in the Contract Sum or Contract Time. Promptly execute the change.

H. Time and Material Change Order: Submit an itemized account and supporting data after completion of the change, within the time limits indicated in the Conditions of the Contract. The Engineer will determine the change allowable in the Contract Sum and Contract Time as provided in the Contract Documents.

I. Maintain detailed records of work done on a Time and Material basis. Provide full information required for an evaluation of the proposed changes, and to substantiate costs for the changes in the Work. Submit form "Breakdown of Hourly Rates" attached at the end of this section.

J. Document each quotation for a change in cost or time with sufficient data to allow an evaluation of the quotation. Provide detailed breakdown of costs and estimates for labor and materials including a detailed breakdown for subcontractor's or vendor's Work. Include copies of written quotations from subcontractors or vendors.

K. Change Order Forms: AIA G701 Change Order.

L. Execution of Change Orders: The Engineer will issue Change Orders for signatures of the parties as provided in the Conditions of the Contract.

M. Correlation Of Contractor Submittals:
   1. Promptly revise the Schedule of Values and the Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum. Promptly revise progress schedules to reflect any change in the Contract Time, revise sub-schedules to adjust times for any other items of work affected by the change, and resubmit.
   2. Promptly enter changes in the Project Record Documents.

1.7 DEFECT ASSESSMENT

A. Replace the Work, or portions of the Work, not conforming to specified requirements.

B. If, in the opinion of the Engineer, it is not practical to remove and replace the Work, the Engineer will direct an appropriate remedy or adjust payment.

C. The defective Work may remain, but the unit sum will be adjusted to a new sum at the discretion of the Engineer.

D. The defective Work will be partially repaired to the instructions of the Engineer, and the unit sum will be adjusted to a new sum at the discretion of the Engineer.

E. The individual Specification Sections may modify these options or may identify a specific formula or percentage sum reduction.

F. The authority of the Engineer to assess the defect and identify a payment adjustment, is final.

G. Non-Payment For Rejected Products: Payment will not be made for rejected products for any of the following:
   1. Products wasted or disposed of in a manner that is not acceptable.
   2. Products determined as unacceptable before or after placement.
   3. Products not completely unloaded from the transporting vehicle.
   4. Products placed beyond the lines and levels of the required Work.
   5. Products remaining on hand after completion of the Work.
   6. Loading, hauling, and disposing of rejected products.

2.0 PRODUCTS (Not Used)

3.0 EXECUTION (Not Used)

END OF SECTION 01200

SECTION 01300 - ADMINISTRATIVE PROCEDURES

1.0 GENERAL

1.1 SECTION INCLUDES

A. Site administration

B. Construction progress schedules.

C. Coordination and project conditions.

D. Preconstruction meeting.

E. Site mobilization meeting.

F. Progress meetings.

G. Preinstallation meeting.

1.2 SITE ADMINISTRATION

A. Maintain a daily attendance log to include the names of all project employees and guests to the site. The log sheet or sheets must clearly indicate the Project Name, and the name of the General Contractor. Each line on the log should allow for the name of each employee, the employee's job title (use terminology used by prevailing wage job title), and the name of that employee's employer. Each guest signing the log should indicate a brief description of the reason for the visit, and that guest's employer or organization.

1.3 COORDINATION AND PROJECT CONDITIONS

A. Coordinate the scheduling, submittals, and the Work of the various Sections of the Project Manual to ensure an efficient and orderly sequence of the demolition elements.

B. Coordinate the completion and clean up of the Work of the separate Sections in preparation for Substantial Completion.

C. Coordinate access to the site for correction of defective Work and the Work not in accordance with the Contract Documents.

1.4 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial progress schedule in duplicate within 15 days after date of established notice to proceed for Engineer to review.

B. Revise and resubmit as required.

C. Submit revised schedules with each Application for Payment, identifying changes since previous version.

D. Submit a computerized chart with separate line for each major section of Work or operation, identifying first work day of each week.

E. Show complete sequence of construction activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.

F. Indicate estimated percentage of completion for each item of Work at each submission.

G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by the Owner and under Allowances.

1.5 PRECONSTRUCTION MEETING

A. The Engineer will schedule a meeting after the City of Warwick, Purchasing Division, issues a Purchase Order to the Contractor.

B. Attendance Required: Owner, Engineer, and Contractor.

C. Agenda:
1. Execution of the Owner-Contractor Agreement.
2. Submission of the executed bond and insurance certificates.
3. Distribution of the Contract Documents.
4. Submission of a list of Subcontractors, a list of products, schedule of values, and a progress schedule.
5. Designation of the personnel representing the parties in the Contract, and the Engineer.
6. The procedures and processing of the field decisions, submittals, substitutions, applications for payments, proposal requests, Change Orders, and Contract closeout procedures.
7. Scheduling.

D. Record the minutes and distribute copies within two days after the meeting to the participants, with two copies to the Engineer, the Owner, the participants, and those affected by the decisions made.

1.6 SITE MOBILIZATION MEETING

A. The Contractor will schedule a meeting at the Project site prior to the Contractor's occupancy.

B. Attendance Required: The Owner, Engineer, Contractor, the Contractor's Superintendent, and major Subcontractors.

C. Agenda:
1. Use of the premises by the Contractor.
2. The Owner's requirements and partial occupancy.
3. Construction facilities and controls provided by the Owner.
4. Temporary utilities provided by the Owner.
5. Security and housekeeping procedures.
6. Schedules.
7. Application for payment procedures.
8. Procedures for testing.
9. Procedures for maintaining the record documents.

D. Record the minutes and distribute the copies within two days after the meeting to the participants, with two copies to the Engineer, Owner, participants, and those affected by the decisions made.

1.7 PROGRESS MEETINGS

A. Schedule and administer the meetings throughout the progress of the Work at maximum monthly intervals.

B. Make arrangements for the meetings, prepare the agenda with copies for the participants, and preside at the meetings.

C. Attendance Required: The job superintendent, major subcontractors and suppliers, the Owner, Engineer, as appropriate to agenda topics for each meeting.

D. Agenda:
1. Review the minutes of previous meetings.
2. Review of the Work progress.
3. Field observations, problems, and decisions.
4. Identification of the problems which impede the planned progress.
5. Review of the submittals schedule and status of the submittals.
6. Review of delivery schedules.
7. Maintenance of the progress schedule.
8. Corrective measures to regain the projected schedules.
9. Planned progress during the succeeding work period.
10. Coordination of the projected progress.
11. Maintenance of the quality and work standards.
12. Effect of the proposed changes on the progress schedule and coordination.
13. Other business relating to the Work.

E. Record the minutes and distribute the copies within two days after the meeting to the participants, with two copies to the Engineer, Owner, participants, and those affected by the decisions made.

1.8 PREINSTALLATION MEETING

A. When required in the individual specification Sections, convene a preinstallation meeting at the site prior to commencing the Work of the Section.

B. Require attendance of the parties directly affecting, or affected by, the Work of the specific Section.

C. Notify the Engineer four days in advance of the meeting date.

D. Prepare an agenda and preside at the meeting:
1. Review the conditions of installation, preparation and installation procedures.
2. Review coordination with the related work.

E. Record the minutes and distribute the copies within two days after the meeting to the participants, with two copies to the Engineer, Owner, participants, and those affected by the decisions made.

2.0 PRODUCTS

Not used.

3.0 EXECUTION

Not used.

END OF SECTION 01300

SECTION 01330 - SUBMITTAL PROCEDURES

1.0 GENERAL

1.1 SECTION INCLUDES

A. Submittal procedures.

B. Construction progress schedules.

C. Proposed products list.

D. Product data.

E. Shop drawings.

F. Samples.

G. Design data.

H. Test reports.

I. Certificates.

J. Manufacturer's instructions.

K. Manufacturer's field reports.

1.2 SUBMITTAL PROCEDURES

A. Master List Submittal:
   1. Submit a master list of the required submittals with a proposed date for each item to be submitted.
   2. Show the date submittal was sent, days since submittal was sent, status of submittal, date submittal was received in return, and any date associated with resubmittals.
   3. Update master list with each submission and response.
   4. Issue a copy of master list at least monthly to the Engineer.

B. Transmit each submittal with a dated Engineer-accepted transmittal form.

C. Sequentially number the transmittal form. Mark the revised submittals with an original number and a sequential alphabetic suffix.

D. Identify the Project, Contractor, Subcontractor and Supplier; the pertinent drawing and detail number, and the specification Section number, appropriate to the submittal.

E. Apply a Contractor's stamp, signed or initialed, certifying that the review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of the information is in accordance with the requirements of the Work and the Contract Documents.

1. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.

F. Schedule submittals to expedite the Project, and deliver to the Engineer at their business address. Coordinate the submission of related items.

G. For each submittal for review, allow 15 days excluding the delivery time to and from the Contractor.

H. Identify the variations from the Contract Documents and the Product or system limitations which may be detrimental to a successful performance of the completed Work.

I. Allow space on the submittals for the Contractor and the Engineer review stamps.

J. When revised for resubmission, identify the changes made since the previous submission.

K. Distribute copies of the reviewed submittals as appropriate. Instruct the parties to promptly report an inability to comply with the Contract requirements.

L. Submittals not requested will not be recognized or processed.

M. Submittals Prepared Using Copyrighted AIA Forms:
1. Use only original copyrighted forms for the first typed copy of each submission. Do not use unauthorized duplications of copyrighted forms for the first typed copy.
2. Proceed to reproduce one or more copies of the first typed copy as may be required.
3. Copyrighted forms are those printed forms purchasable through an authorized outlet, or reproduced electronically under license from the AIA Electronic Document Service.

1.3 CONSTRUCTION PROGRESS SCHEDULES

A. Submit preliminary outline Schedules within 15 days after the date of receipt of a Purchase Order from the City of Warwick, Purchasing Division for coordination with the Owner's requirements. After a review, submit detailed schedules within 15 days modified to accommodate the revisions recommended by the Engineer.

1. The Schedule shall be developed using Primavera or Suretrak.

B. Submit revised Progress Schedules, in both hard copy and in disc form, with each Application for Payment.

C. Distribute copies of the reviewed schedules to the Project site file, subcontractors, suppliers, and other concerned parties.

D. Instruct the recipients to promptly report, in writing, the problems anticipated by the projections indicated in the schedules.

E. Submit a computer generated horizontal bar chart with a separate line for each major portion of the Work or operation, or section of the Work, identifying the first workday of each week.

F. Show a complete sequence of construction by activity, identifying the Work of separate stages and other logically grouped activities. Indicate the early and late start, the early and late finish, float dates, and the duration.

G. Indicate an estimated percentage of completion for each item of the Work at each submission.

H. Provide a separate schedule of submittal dates for shop drawings, product data, and samples, including Owner furnished Products and Products identified under Allowances, if any, and the dates reviewed submittals will be required from the Engineer. Indicate the decision dates for selection of the finishes.

I. Indicate the delivery dates for Owner furnished Products, and for Products identified under Allowances.

J. Revisions to Schedules:
   1. Indicate the progress of each activity to the date of submittal, and the projected completion date of each activity.
   2. Identify the activities modified since the previous submittal, major changes in the scope, and other identifiable changes.
   3. Provide a narrative report to define the problem areas, the anticipated delays, and impact on the Schedule. Report the corrective action taken, or proposed, and its effect.

K. If, in the opinion of the Engineer, the Contractor falls behind the progress schedule, the Contractor shall take any and all steps necessary to improve his progress at no additional cost to Owner, such as the following:
   1. Increase construction manpower in such quantities and crafts as will substantially eliminate the lag in schedule progress.
   2. Increase the number of working hours per shift, shifts per working day, working days per week, or the amount of construction equipment, or any combination of the foregoing, sufficiently to substantially eliminate lag in scheduled progress
   3. Reschedule sequence activities to achieve maximum practical concurrently accomplishment of work activities.

1.4 PROPOSED PRODUCTS LIST

A. Within 15 days after the date of receipt of a Purchase Order from the City of Warwick, Purchasing Division, submit a list of major products proposed for use, with the name of the manufacturer, the trade name, and the model number of each product.

B. For the products specified only by reference standards, give the manufacturer, trade name, model or catalog designation, and reference standards.

C. With each product listed, indicate the submittal requirements specified to be adhered to, and an indication of relevant "long-lead-time" information, when appropriate.

1.5 PRODUCT DATA

A. Product Data: Submit to the Engineer for review for the limited purpose of checking for conformance with the information given and the design concept expressed in the Contract

Documents. Provide copies and distribute in accordance with the SUBMITTAL PROCEDURES article and for the record documents purposes described in Section 01780.

B. Submit the number of copies which the Contract requires, plus two copies the Engineer will retain, but no less than a minimum of six (6) copies.

C. Mark each copy to identify the applicable products, models, options, and other data. Supplement the manufacturers' standard data to provide the information specific to this Project.

D. Indicate the product utility and electrical characteristics, the utility connection requirements, and the location of utility outlets for service for functional equipment and appliances.

E. After a review distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in Section 01780.

1.6 SHOP DRAWINGS

A. Shop Drawings: Submit to the Engineer for review for the limited purpose of checking for conformance with the information given and the design concept expressed in the Contract Documents. Produce copies and distribute in accordance with the SUBMITTAL PROCEDURES article and for the record documents purposes described in Section 01780.

B. Indicate the special utility and electrical characteristics, the utility connection requirements, and the location of utility outlets for service for functional equipment and appliances.

C. Submit in the form of one reproducible transparency and one opaque reproduction.

D. Submit the number of copies which the Contract requires, plus two copies the Engineer will retain, but no less than a minimum of six (6) copies.

1.7 SAMPLES

A. Samples: Submit to the Engineer for review for the limited purpose of checking for conformance with the information given and the design concept expressed in the Contract Documents. Produce duplicates and distribute in accordance with the SUBMITTAL PROCEDURES article and for the record documents purposes described in Section 01780.

B. Submit samples to illustrate the functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate the sample submittals for interfacing Work.

C. Include identification on each sample, with the full Project information.

D. Submit the number of samples specified in the individual specification Sections; the Engineer will retain one sample.

E. Reviewed samples, which may be used in the Work, are indicated in the individual specification Sections.

F. Samples will not be used for testing purposes unless they are specifically stated to be in the specification Section.

1.8 DESIGN DATA

A. Submit for the Engineer's knowledge as contract administrator, or for the Owner.

B. Submit for information for the limited purpose of assessing conformance with the information given and the design concept expressed in the Contract Documents.

1.9 TEST REPORTS

A. Submit for the Engineer's knowledge as Contract administrator or for the Owner.

B. Submit test reports for information for the limited purpose of assessing conformance with the information given and the design concept expressed in the Contract Documents.

1.10 CERTIFICATES

A. When specified in the individual specification Sections, submit certification by the manufacturer, installation/application subcontractor, or the Contractor to the Engineer, in the quantities specified for the Product Data.

B. Indicate that the material or product conforms to or exceeds the specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on the material or product, but must be acceptable to the Engineer.

1.11 MANUFACTURER'S INSTRUCTIONS

A. When specified in the individual specification Sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to the Engineer for delivery to the Owner in the quantities specified for Product Data.

B. Indicate the special procedures, and the perimeter conditions requiring special attention, and the special environmental criteria required for application or installation.

1.12 MANUFACTURER'S FIELD REPORTS

A. Submit reports for the Engineer's benefit as contract administrator or for the Owner.

B. Submit the report in duplicate within 30 days of observation to the Engineer for information.

C. Submit for information for the limited purpose of assessing conformance with the information given and the design concept expressed in the Contract Documents.

2.0 PRODUCTS

Not Used.

3.0 EXECUTION

Not Used.

END OF SECTION 01330

SECTION 01400 – QUALITY REQUIREMENTS

1.0 GENERAL

1.1 SECTION INCLUDES

A. Quality control and control of installation.

B. Verification of Credentials and Licenses.

C. Tolerances

D. References.

E. Mock-up requirements.

F. Testing and inspection services.

G. Manufacturers' field services.

1.2 QUALITY CONTROL AND CONTROL OF INSTALLATION

A. Monitor a quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of the specified quality.

B. Comply with the manufacturers' instructions, including each step in sequence.

C. When the manufacturers' instructions conflict with the Contract Documents, request a clarification from the Engineer before proceeding.

D. Comply with the specified standards as a minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform the Work by persons qualified to produce the required and specified quality.

F. Verify that field measurements are as indicated on the Shop Drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.3 VERIFICATION OF CREDENTIALS AND LICENSES

A. The Owner has implemented a project management oversight process and is applying it to current construction project at the City of Warwick Municipal Buildings.

B. An element of this oversight process is the verification that persons employed on the project site have appropriate and current credentials and licenses in their possession, at the project site, for the work they are performing.

C. Verification of credentials and licenses of both union and non-union persons will be conducted during onsite inspections.

D. Contractor's Certified Monthly Payroll Records will be reviewed for conformance with RI State Prevailing Wage Rate requirements.

E. Those persons without the appropriate credentials and licenses will be subject to dismissal from the project site.

1.4 TOLERANCES

A. Monitor the fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with the manufacturers' tolerances. When the manufacturers' tolerances conflict with the Contract Documents, request a clarification from the Engineer before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

1.5 REFERENCES

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by the date of issue current on the date of the Contract Documents, except where a specific date is established by code.

C. Obtain copies of the standards where required by the product specification Sections.

D. When the specified reference standards conflict with the Contract Documents, request a clarification from the Engineer before proceeding.

E. Neither the contractual relationships, duties, or responsibilities of the parties in the Contract, nor those of the Engineer, shall be altered from the Contract Documents by mention or inference otherwise in reference documents.

1.6 MOCK-UP REQUIREMENTS

A. Tests will be performed under the provisions identified in this Section and identified in the respective product specification Sections.

B. Assemble and erect the specified items with the specified attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mock-ups shall be a comparison standard for the remaining Work.

D. Where the mock-up has been accepted by the Engineer and is specified in the product specification Sections to be removed, remove the mock-up and clear the area when directed to do so by the Engineer.

1.7 TESTING AND INSPECTION SERVICES

A. The Contractor will submit the name of an independent firm to the Engineer for approval by the Owner, to perform the testing and inspection services. The Contractor shall pay for the services from the cash allowances specified in Section 01200.

B. The independent firm will perform the tests, inspections and other services specified in the individual specification Sections and as required by the Engineer.
   1. Laboratory: Authorized to operate in the location in which the Project is located.
   2. Laboratory Staff: Maintain a full-time registered Engineer on staff to review the services.
   3. Testing Equipment: Calibrated at reasonable intervals with devices of accuracy traceable to either the National Bureau of Standards or to the accepted values of natural physical constants.

C. Testing, inspections and source quality control may occur on or off the project site. Perform off-site testing as required by the Engineer or the Owner.

D. Reports will be submitted by the independent firm to the Engineer and the Contractor, in duplicate, indicating the observations and results of tests and indicating the compliance or non-compliance with Contract Documents.

E. Cooperate with the independent firm; furnish samples of the materials, design mix, equipment, tools, storage, safe access, and the assistance by incidental labor as requested.
   1. Notify the Engineer and the independent firm 24 hours prior to the expected time for operations requiring services.
   2. Make arrangements with the independent firm and pay for additional samples and tests required for the Contractor's use.

F. Testing and employment of the testing agency or laboratory shall not relieve the Contractor of an obligation to perform the Work in accordance with the requirements of the Contract Documents.

G. Re-testing or re-inspection required because of a non-conformance to the specified requirements shall be performed by the same independent firm on instructions by the Engineer.

H. Payment for the re-testing or re-inspection will be charged to the Contractor by deducting the testing charges from the Contract Sum.

I. Agency Responsibilities:
   1. Test samples of mixes submitted by the Contractor.
   2. Provide qualified personnel at the site. Cooperate with the Engineer and the Contractor in performance of services.
   3. Perform specified sampling and testing of the products in accordance with the specified standards.

4. Ascertain compliance of the materials and mixes with the requirements of the Contract Documents.
5. Promptly notify the Engineer and the Contractor of observed irregularities or non-conformance of the Work or products.
6. Perform additional tests required by the Engineer.
7. Attend the preconstruction meetings and the progress meetings.

J. Agency Reports: After each test, promptly submit two copies of the report to the Engineer and to the Contractor. When requested by the Engineer, provide an interpretation of the test results.

K. Include the following:
1. Date issued.
2. Project title and number.
3. Name of inspector.
4. Date and time of sampling or inspection.
5. Identification of product and specifications section.
6. Location in the Project.
7. Type of inspection or test.
8. Date of test.
9. Results of tests.
10. Conformance with Contract Documents.

L. Limits On Testing Authority:
1. Agency or laboratory may not release, revoke, alter, or enlarge on the requirements of the Contract Documents.
2. Agency or laboratory may not approve or accept any portion of the Work.
3. Agency or laboratory may not assume any duties of the Contractor.
4. Agency or laboratory has no authority to stop the Work.

1.8 MANUFACTURERS' FIELD SERVICES

A. When specified in the individual specification Sections, require the material or Product suppliers, or manufacturers, to provide qualified staff personnel to observe the site conditions, the conditions of the surfaces and installation, the quality of workmanship, the start-up of equipment, or test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.

B. Submit the qualifications of the observer to the Engineer 30 days in advance of the required observations. Observer, subject to approval of Engineer.

C. Report the observations and the site decisions or instructions given to the applicators or installers that are supplemental or contrary to the manufacturers' written instructions.

D. Refer to Section 01330 - SUBMITTAL PROCEDURES, MANUFACTURERS' FIELD REPORTS article.

2.0 PRODUCTS

Not Used.

3.0 EXECUTION

Not used.

END OF SECTION 01400

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

1.0 GENERAL

1.1 SECTION INCLUDES

A. Temporary Utilities:
   1. Temporary electricity.
   2. Temporary lighting for construction purposes.
   3. Temporary heating.
   4. Temporary cooling.
   5. Temporary ventilation.
   6. Telephone service.
   7. Facsimile service.
   8. Temporary water service.
   9. Temporary sanitary facilities.

B. Construction Facilities:
   1. Field offices and sheds.
   2. Vehicular access.
   3. Parking.
   4. Progress cleaning and waste removal.

C. Temporary Controls:
   1. Security.
   2. Fire detection.
   3. Water control.
   4. Dust control.
   5. Erosion and sediment control.
   6. Noise control.
   7. Pest control.
   8. Pollution control.
   9. Rodent control.

D. Removal of utilities, facilities, and controls.

1.2 SUMMARY

A. This section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Sections include the following:
   1. Division 1.
   2. Divisions 2 thru 16.

1.3 TEMPORARY ELECTRICITY

A. The Owner will pay the cost of energy used. Exercise measures to conserve energy. Utilize the Owner's existing power service.

1.4 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Permanent building lighting may be utilized during construction.

1.5 TEMPORARY HEATING

A. Existing facilities shall be used.

1.6 TEMPORARY COOLING

A. Existing facilities shall be used.

1.7 TEMPORARY VENTILATION

A. Utilize the existing ventilation equipment. Extend and supplement the equipment with temporary fan units as required to maintain clean air for construction operations.

1.8 TELEPHONE SERVICE

A. Provide, maintain, and pay for a dedicated telephone service to the field office at the time of project mobilization.

1.9 FACSIMILE SERVICE

A. Provide, maintain and pay for a facsimile service, and a dedicated phone line, to the field office at the time of project mobilization.

1.10 TEMPORARY WATER SERVICE

A. The Owner will pay the cost of temporary water. Exercise measures to conserve water. Utilize the Owner's existing water system, extend and supplement with temporary devices as needed to maintain the specified conditions for construction operations.

1.11 TEMPORARY SANITARY FACILITIES

A. The existing designated facilities located within each building may be used during construction operations. Maintain daily in a clean and sanitary condition.

B. At the end of construction, return the facilities to the same or better condition as the original condition.

1.12 FIELD OFFICES AND SHEDS

A. A designated existing space within the building may be used for field offices upon approval of Owner.

1.13 VEHICULAR ACCESS

A. Construct temporary all-weather access roads from the public thoroughfares to serve the construction area, of a width and load bearing capacity to provide unimpeded traffic for construction purposes.

B. Extend and relocate vehicular access as the Work progress requires, provide detours as necessary for an unimpeded traffic flow.

C. Location as approved by the Owner.

D. Provide unimpeded access for emergency vehicles. Maintain 20-foot width driveways with turning space between and around combustible materials.

E. Provide and maintain access to fire hydrants and control valves free of obstructions.

F. Use designated existing on-site roads for construction traffic.

1.14 PARKING

A. Locate as approved by the Owner.

B. When site space is not adequate, arrange through the Owner for additional off-site parking.

C. Use of designated existing on-site streets and driveways for construction traffic is permitted. Tracked vehicles are not allowed on paved areas.

D. Use of designated areas of existing parking facilities by construction personnel is permitted.

E. Do not allow heavy vehicles or construction equipment in parking areas.

F. Removal, Repair:
   1. Remove temporary materials and at Substantial Completion.
   2. Remove underground work and compacted materials to a depth of 2 feet; fill and grade the site as specified.
   3. Repair existing and permanent facilities damaged by use, to the original or specified condition.

1.15 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain the site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean the interior areas prior to the start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and rubbish from the site periodically, weekly, or daily, as necessary to prevent an on-site accumulation of waste material, debris, and rubbish, and dispose off-site.

E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.16 SECURITY

A. Security Program:
   1. Protect the Work, the existing premises, or the Owner's operations from theft, vandalism, and unauthorized entry.
   2. Initiate the program in coordination with the Owner's existing security system at the mobilization.
   3. Maintain the program throughout the construction period until Owner occupancy.

B. Entry Control:
   1. Restrict the entrance of persons and vehicles into the Project site, or the existing facilities.
   2. Allow entrance only to authorized persons with the proper identification.
   3. Maintain a log of workers and visitors, make available to the Owner on request.
   4. Coordinate the access of the Owner's personnel to the site in coordination with the Owner's security forces.

1.17 FIRE DETECTION

A. Each day, before beginning any construction operations that can potentially trigger the existing fire alarm detection system, the Contractor is permitted to temporarily disconnect the system in the specific areas of construction, for as long as may be necessary. The Owner shall be notified each time the existing system is disabled.

B. Failure to so notify the Owner will subject the Contractor to a monetary fine for each occurrence, should the fire detection system be activated inadvertently by a construction activity.

1.18 WATER CONTROL

A. Grade the site to drain. Maintain excavations free of water. Provide, operate, and maintain the pumping equipment.

B. Protect the site from puddling or running water. Provide water barriers as required to protect the site from soil erosion.

1.19 DUST CONTROL

A. Execute the Work by methods to minimize raising dust from construction operations.

B. Provide positive means to prevent air-borne dust from dispersing into the atmosphere.

1.20 EROSION AND SEDIMENT CONTROL

A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.

B. Minimize the amount of bare soil exposed at one time.

C. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.

D. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.

E. Periodically inspect the earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

1.21 NOISE CONTROL

A. Provide methods, means, and facilities to minimize noise produced by the construction operations.

1.22 PEST CONTROL

A. Provide methods, means, and facilities to prevent pests and insects from damaging the Work, or entering the facility.

1.23 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent the contamination of soil, water, and the atmosphere from discharge of noxious, toxic substances, and pollutants produced by the construction operations.

1.24 RODENT CONTROL

A. Provide methods, means, and facilities to prevent rodents from accessing or invading the premises.

1.25 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, and materials, prior to Substantial Completion.

B. Remove the underground installations to a minimum depth of 2 feet. Grade the site as indicated.

C. Clean and repair the damage caused by installation or use of temporary work.

D. Restore the existing [and the permanent] facilities used during construction to the original condition. Restore the permanent facilities used during construction to the specified condition.

2.0 PRODUCTS

Not Used.

3.0 EXECUTION

Not Used.

END OF SECTION 01500

SECTION 01600 - PRODUCT REQUIREMENTS

1.0 GENERAL

1.1 SECTION INCLUDES

A. Products.

B. Product delivery requirements.

C. Product storage and handling requirements.

D. Product options.

E. Product substitution procedures.

1.2 PRODUCTS

A. Products: Means new material, machinery, components, fixtures, or systems forming the Work; but does not include the machinery or equipment used for the preparation, fabrication, conveying, or erection of the Work. Products may include the existing materials or components required or specified for reuse.

B. Furnish products of qualified manufacturers suitable for the intended use. Furnish products of each type by a single manufacturer unless specified otherwise.

C. Do not use materials and equipment removed from the existing premises, except as specifically permitted by the Contract Documents.

D. Furnish interchangeable components of the same manufacturer for the components being replaced.

1.3 PRODUCT DELIVERY REQUIREMENTS

A. Transport and handle products in accordance with the manufacturer's instructions.

B. Promptly inspect shipments to ensure that the products comply with the requirements, the quantities are correct, and the products are undamaged.

C. Provide equipment and personnel to handle the products by methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect the products in accordance with the manufacturers' instructions.

B. Store with seals and labels intact and legible.

C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to the product.

D. For exterior storage of fabricated products, place on sloped supports above the ground.

E. Provide bonded off-site storage and protection when the site does not permit on-site storage or protection.

F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent the condensation and degradation of products.

G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

H. Provide equipment and personnel to store the products by methods to prevent soiling, disfigurement, or damage.

I. Arrange storage of the products to permit access for inspection. Periodically inspect to verify that the products are undamaged and are maintained in acceptable condition.

1.5 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Products of one of the manufacturers named and meeting the specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

1.6 PRODUCT SUBSTITUTION PROCEDURES

A. Instructions to Bidders specify the time restrictions for submitting requests for Substitutions during the bidding period to requirements specified in this section.

B. Substitutions may be considered only when a product becomes no longer in production following the date of receipt of the Purchase Order for this Contract. Submit certification both that specified product was carried in Bid, and is no longer obtainable.

C. Document each request with complete data substantiating the compliance of a proposed Substitution with the Contract Documents.

D. A request constitutes a representation that the Bidder:
   1. Has investigated the proposed Product and determined that it meets or exceeds the quality level of the specified product.
   2. Will provide the same warranty for the Substitution as for the specified Product.
   3. Will coordinate the installation and make changes to other Work which may be required for the Work to be complete with no additional cost to the Owner.

4. Waives claims for additional costs or time extension which may subsequently become apparent.
5. Will reimburse the Owner and the Engineer for review or redesign services associated with re-approval by the authorities having jurisdiction.

E. Substitutions will not be considered when they are indicated or implied on the Shop Drawing or Product Data submittals, without a separate written request, or when acceptance will require revision to the Contract Documents.

F. Substitution Submittal Procedure, If Permitted Following Contract Award:
1. Submit three copies of a request for Substitution for consideration, no later than 20 working days following date of receipt of the Purchase Order for this Contract. Limit each request to one proposed Substitution.
2. Submit the Shop Drawings, Product Data, and the certified test results attesting to the proposed product equivalence. The burden of proof is on the proposer.
3. The Engineer will notify the Contractor in writing of a decision to accept or reject the request.

2.0 PRODUCTS

Not Used.

3.0 EXECUTION

Not Used.

END OF SECTION 01600

SECTION 01700 - EXECUTION REQUIREMENTS

1.0 GENERAL

1.1 SECTION INCLUDES

A. Examination.

B. Preparation.

C. Protection of adjacent construction.

D. Cutting and patching.

E. Special procedures.

F. Progress cleaning and waste removal.

G. Final cleaning.

H. Starting and adjusting of systems.

I. Demonstration and Instructions.

J. Testing, adjusting and balancing.

K. Protecting Installed Construction.

1.2 EXAMINATION

A. Acceptance of Conditions:
   1. Verify that existing applicable site conditions, substrates, or substrate surfaces are acceptable or meet specific requirements of individual specifications Sections, for subsequent Work to proceed.
   2. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
   3. Examine and verify specific conditions described in individual specifications Sections.
   4. Verify that utility services are available, of correct characteristics, and in correct locations.
   5. Beginning of new Work, that relies upon the quality and proper execution of Work of a preceding trade, means acceptance of that preceding Work as appropriate for the proper execution of subsequent Work.
   6. Acceptance of preceding Work that can be shown later to have adversely affected proper performance of new Work may result in removal and repeat performance of all Work involved at no cost to the Owner.

1.3 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply substrate primer, sealer, or conditioner, required or recommended by manufacturer, prior to applying any new material or substance in contact or bond.

D. Prior to the application, installation, or erection of any products and product components, perform any other preparatory operations, or surface or substrate modifications, as may be specified or directed by product manufacturers.

1.4 PROTECTION OF ADJACENT CONSTRUCTION

A. Protect existing adjacent properties and provide special protection where specified in individual Specification Sections.

B. Provide protective coverings at wall, projections, jambs, sills, and soffits of existing openings.

C. Protect existing finished floors, stairs, and other existing surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

D. Repair adjacent properties damaged by construction operations to original condition to the satisfaction of the Owner.

E. Prohibit unnecessary traffic from existing landscaped areas.

F. Restore grassed landscaped areas damaged by construction operations to full healthy growth, by installing loam and sod to the requirements, and under the supervision of, the Owner.

1.5 CUTTING AND PATCHING

A. Employ original, or skilled and experienced installer to perform cutting and patching.

B. Submit written request in advance of cutting or altering elements which affect:
   1. Structural integrity of element.
   2. Integrity of weather-exposed or moisture-resistant elements.
   3. Efficiency, maintenance, or safety of element.
   4. Visual qualities of sight-exposed elements.
   5. Existing construction, or Work of separate contractor.

C. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
   1. Fit the several parts together, to integrate with other Work.
   2. Uncover Work to install or correct ill-timed Work.
   3. Remove and replace defective and non-conforming Work.
   4. Remove samples of installed Work for testing.
   5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

D. Execute Work by methods that will avoid damage to other Work, and provide proper surfaces to receive patching and finishing.

E. Cut masonry, concrete, and other rigid materials using masonry saw or core drill.

F. Restore Work with new Products in accordance with requirements of Contract Documents.

G. Fit Work tight to pipes, sleeves, ducts, conduits, and other penetrations through surfaces.

H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

I. At penetration of fire resistance-rated partitions, ceiling, or floor construction completely seal voids with fire resistance-rated or fire resistant material in accordance with Section 07840, to full thickness of the penetrated element.

J. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.

K. Identify any hazardous substance or conditions exposed during the Work to the Engineer for decision or remedy.

1.6 SPECIAL PROCEDURES

A. Materials: As specified in product Sections; match existing with new products, or salvaged products as appropriate, for patching and extending work.

B. Employ skilled and experienced installer to perform alteration work.

C. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.

D. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.

E. Remove debris and abandoned items from area and from concealed spaces.

F. Prepare surface and remove surface finishes to provide installation of new Work and finishes.

G. Close openings in exterior surfaces to protect existing Work from weather and extremes of temperature and humidity.

H. Remove, cut, and patch Work in a manner to minimize damage and to provide means of restoring products and finishes to original or specified condition.

I. Refinish existing visible surfaces to remain in renovated rooms and spaces to specified condition for each material, with a neat transition to adjacent finishes.

J. Where new Work abuts or aligns with existing, provide a smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.

K. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and submit recommendation to Engineer for review.

L. Where a change of plane of 1/4 inch or more occurs, submit recommendation for providing a smooth transition to Engineer for review.

M. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.

N. Patch or replace portions of existing surfaces which are damaged, or showing other imperfections.

O. Finish the surfaces as specified in individual product Sections, or as indicated on the Drawings.

1.7 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and rubbish from site periodically or weekly and dispose of off-site.

E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.8 FINAL CLEANING

A. Execute final cleaning of areas affected by the Work prior to final project assessment.

B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Clean equipment and fixtures to a sanitary condition using cleaning materials appropriate to the surface and material being cleaned.

D. Clean or replace filters of operating equipment as directed by Engineer.

E. Clean debris from roofs, gutters, downspouts, and drainage systems.

F. Clean site; sweep paved areas, rake clean landscaped surfaces.

G. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.9 STARTING AND ADJUSTING OF SYSTEMS

A. Coordinate schedule for starting and adjusting of various equipment and systems.

B. Notify Engineer and Owner seven days prior to starting and adjusting of each item.

C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or other conditions which may cause damage.

D. Verify that tests, meter readings and specified electrical characteristics agree with those required by the equipment or system manufacturer.

E. Verify wiring and support components for equipment are complete and tested.

F. Execute starting and adjusting under supervision of responsible Contractor's personnel or manufacturer's representative, in accordance with manufacturer's instructions.

G. Adjust operating Products and equipment to ensure smooth and unhindered operation.

H. When specified in individual specifications Section, require manufacturer to provide authorized representative to be present at the site to inspect, check, and approve equipment or system installation prior to starting, and to supervise placing of equipment or system in operation.

I. Submit a written report in accordance with Section 01400 that equipment or system has been properly installed and is functioning correctly.

1.10 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.

B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manuals with Owner's personnel in detail to explain all aspects of operation and maintenance.

D. Demonstrate start-up, operation, control, adjustment, trouble shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled or agreed upon times, at equipment or system location.

E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

1.11 TESTING, ADJUSTING, AND BALANCING

A. Submit, for the Owner's approval, the name of an independent firm to perform testing, adjusting, and balancing. The independent firm's services will be paid for by Change Order from a testing and inspection allowance specified in Section 01200.

B. The independent firm will perform services specified in individual specifications Sections.

C. Reports will be submitted by the independent firm to the Engineer and the Owner indicating observations and test results, indicating compliance or non-compliance with specified requirements and with the requirements of the Contract Documents.

1.12 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

E. Repair or replace installed Work damaged by construction operations, as directed by the Engineer.

2.0 PRODUCTS

Not Used.

3.0 EXECUTION

Not Used.

END OF SECTION 01700

SECTION 01780 - CLOSEOUT SUBMITTALS

1.0 GENERAL

1.1 SECTION INCLUDES

A. Substantial Completion

B. Closeout procedures.

C. Quality assurance.

D. Maintenance service.

E. Operations and maintenance manuals.

F. Materials and finishes manuals.

G. Equipment and systems manuals.

H. Spare parts and maintenance materials.

I. Product warranties and product bonds.

J. Project Record documents.

1.2 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items that are incomplete in request.
   1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and the reasons why the Work is not complete.
   2. Advise Owner of pending insurance changeover requirements.
   3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
   6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
   7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
   8. Complete startup testing of systems.
   9. Submit test/adjust/balance records.
   10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   11. Advise Owner of changeover in heat, cooling and other utilities.

12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Engineer and Owner will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete in completed or corrected.
   2. Results of completed inspection will form the basis of requirements for Final Completion.

1.3 CLOSEOUT PROCEDURES

A. Submit a written certification that the Contract Documents have been reviewed, the Work has been inspected, and that the Work is complete in accordance with the Contract Documents and is ready for the Engineer's review.

B. Provide submittals to Engineer that are required by governing or other authorities, including abatement invoices correctly prepared as proscribed in Section 13280. Failure to include correctly prepared abatement invoices will delay issuing of final payment.

C. Provide submittals to Engineer that are required by the governing or other authorities, including the following closeout documents:
   1. AIA Document G706 - Contractor's Affidavit of Payment of Debts and Claims, 1994 Edition.
   2. AIA Document G706A - Contractor's Affidavit of Release of Liens, 1994 Edition.
   3. AIA Document G707 - Consent of Surety to Final payment, 1994 Edition.

D. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

E. The Owner will occupy all portions of the building as specified in Section 01100.

1.4 QUALITY ASSURANCE

A. Employ personnel assembling submittals experienced in the maintenance and the operation of the described products and systems.

1.5 MAINTENANCE SERVICE

A. Submit a contract for furnishing service and maintenance of the components indicated in the specification Sections for one year from date of Substantial Completion, or during the warranty period, whichever period of time is the longest.

B. Provide for an examination of the system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

C. Include a systematic cleaning, examination, adjustment, and lubrication of the components. Repair or replace the parts whenever required. Use the parts produced by the manufacturer of the original component.

D. Do not assign or transfer the maintenance service to an agent or Subcontractor without the prior written consent of the Owner.

1.6 OWNER'S MANUALS

A. Submit the data for Operations and Maintenance, Materials and Finishes, and Equipment and Systems Manuals bound in 8-1/2 x 11 inch text pages, in minimum 2 inch size three D side ring commercial quality binders with durable cleanable plastic covers.

B. Prepare binder covers with the printed title of the manual, title of the project, and the subject matter of binder when multiple binders are required.

C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

D. Drawings: Provide with reinforced punched binder tab. Bind in with the text; fold the larger drawings to the size of the text pages.

E. Submit two copies of a preliminary draft of the proposed formats and outline of the contents before the start of work. The Engineer will review drafts and return one copy with comments.

F. Submit one copy of the completed volumes 15 days prior to final inspection for final review. This copy will be reviewed and returned after final inspection, with the Engineer's comments. Revise the content of the document sets as required prior to final submission.

G. Submit two sets of revised final volumes in final form within ten days after final inspection.

1.7 OPERATIONS AND MAINTENANCE MANUALS

A. Contents: Prepare the Table of Contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
   1. Part 1: Directory, listing the names, addresses, and telephone numbers of the Engineer, Contractor, Subcontractors, and major equipment suppliers.
   2. Part 2: Operation and maintenance instructions arranged by system and subdivided by the specification Section. For each category, identify the names, addresses, and telephone numbers of the Subcontractors and suppliers. Identify the following:
      a) Significant design criteria.
      b) List of equipment.
      c) Parts list for each component.
      d) Operating instructions.
      e) Maintenance instructions for equipment and systems.
      f) Maintenance instructions for [special] finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
   3. Part 3: Project documents and certificates, including the following:
      a) Shop drawings and product data.

b) Air and water balance reports.
c) Certificates.
d) Originals of warranties and bonds.

1.8 MATERIALS AND FINISHES MANUALS

A. Building Products, Applied Materials, and Finishes: Include product data, with the catalog number, size, composition, and the color and texture designations. Include information for re-ordering custom manufactured products.

B. Instruction for Care and Maintenance: include manufacturer's instructions for cleaning agents and methods, precautions against detrimental agents and methods, and a recommended schedule for cleaning and maintenance.

C. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.

D. Additional Requirements: As specified in the individual product specification Sections.

E. Include a listing in the Table of Contents for design data, with a tabbed flysheet and a space for the insertion of data.

1.9 EQUIPMENT AND SYSTEMS MANUALS

A. For equipment, or component parts of equipment put into service during construction and operated by the Owner, submit documents within 10 days after acceptance.

B. Each Item of Equipment and Each System: Include a description of the unit or system, and the component parts. Identify the function, normal operating characteristics, and limiting conditions. Include performance curves, with Engineering data and tests, and complete nomenclature and model number of replaceable parts.

C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications by label machine.

D. Include color-coded wiring diagrams as installed.

E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and special operating instructions.

F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

G. Include a servicing and lubricating schedule, and a list of lubricants required.

H. Include the manufacturer's printed operation and maintenance instructions.

I. Include sequence of operation by the controls manufacturer.

J. Include the original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

K. Include control diagrams by the controls manufacturer as installed.

L. Include the Contractor's coordination drawings, with color-coded piping diagrams as installed.

M. Include charts of valve tag numbers, with the location and function of each valve, keyed to the flow and control diagrams.

N. Include a list of the original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

O. Include test and balancing reports as specified in Section 01400.

P. Additional Requirements: As specified in the individual product specification Sections.

Q. Include a listing in the Table of Contents for design.

1.10 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Furnish spare parts, maintenance, and extra products in the quantities specified in the individual specification Sections.

B. Deliver to the Project site obtain a receipt prior to final payment.

1.11 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Obtain warranties and bonds executed in duplicate by the responsible subcontractors, suppliers, and manufacturers, within 10 days after the completion of the applicable item of work.

B. Execute and assemble the transferable warranty documents and bonds from the subcontractors, suppliers, and manufacturers.

C. Verify that the documents are in the proper form, contain full information, and are notarized.

D. Co-execute the submittals when required.

E. Include a Table of Contents and assemble in a three D side ring binder with a durable plastic cover.

F. Submit prior to the final Application for Payment.

G. Time of Submittals:
   1. For equipment or component parts of equipment put into service during construction with the Owner's permission, submit the documents within 10 days after acceptance.
   2. Make other submittals within 10 days after the Date of Substantial Completion, prior to the final Application for Payment.

3. For items of Work for which acceptance is delayed beyond the Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty or bond period.

1.12 PROJECT RECORD DOCUMENTS

A. Maintain on the site one set of the following record documents; record actual revisions of the Work for all trades:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.
   5. Reviewed Shop Drawings, Product Data, and Samples.
   6. Manufacturer's instructions for assembly, installation, and adjusting.

B. Ensure the entries are complete and accurate, enabling future reference by the Owner.

C. Store the record documents separate from the documents used for construction.

D. Record information concurrent with the construction progress, not less than weekly.

E. Specifications: Legibly mark and record at each product Section description of the actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record the actual construction including:
   1. Measured horizontal and vertical locations of the underground utilities and appurtenances, referenced to permanent surface improvements.
   2. Measured locations of internal utilities and appurtenances concealed in the construction.
   3. Field changes of dimension and detail.
   4. Details not on the original Contract drawings.

G. Legibly marked Specifications, and legibly marked Record Drawings and Shop Drawings shall constitute the Project Record Documents in paper form.

H. At completion of the Work of the Contract, the Engineer will furnish the Contractor a disc, or discs, containing the construction drawings in AutoCAD 2010 form, and the Project Manual content in Microsoft Word form.

I. Transfer the information from the Project Record Documents in paper form to the disc, or discs, and return to the Engineer along with the Project Record Documents in paper form. The disc, or discs, will constitute the Project Record Documents in digital form.

J. The Engineer will review the Project Record Documents and compare them for accuracy, and if necessary return them to the Contractor for final correction. At the time of final submission, submit a claim for the final Application for Payment.

K. Abatement Invoices: Application for Payment must be accompanied with shipping documents for disposal of the abated material as specified in Section 13280.

L. No review or receipt of record of Project Record Documents by the Engineer or the Owner shall be interpreted as a waiver of any deviation from the Contract Documents or Shop Drawings, or in any way relieve the Contractor from responsibility to perform the Work in accordance with the Contract Documents and the Shop Drawings to the extent they are in accordance with the Contract Documents.

M. Update the on-site Project Record Documents on a regular basis. Monthly payments will not be processed if Project Record Documents are not maintained up to date.

2.0 PRODUCTS

Not used.

3.0 EXECUTION

Not used.

END OF SECTION 01780

SECTION 07840 - THROUGH-PENETRATION FIRESTOPPING SYSTEMS

1.0 GENERAL

1.1 GENERAL REQUIREMENTS

A. Work under this specification consists of the furnishing of all labor, materials, equipment, and services necessary for, and incidental to, the complete and proper installation of Underwriter's Laboratories, Inc. (UL) listed firestopping materials, systems, and/or devices for through-penetrations of fire-resistance rated assemblies, and smoke barriers.

1.2 QUALITY ASSURANCE

A. Firestop system installation shall be performed by a firm acceptable to the firestopping material manufacturer.

B. Products, execution, and firestop systems shall conform to the applicable code requirements for the required fire-resistance ratings.

C. All firestopping materials shall be listed as a product by the manufacturer under the appropriate category for the intended use by Underwriter's Laboratories, Inc. (UL) and shall bear the "UL" label, or nationally recognized testing laboratory (NRTL).

D. All firestopping materials shall be new and unused.

E. Any case of error, omission, discrepancy or lack of clarity shall be promptly identified to the Owner.

1.3 SCOPE OF WORK

A. The scope of work includes the complete and proper installation of UL Listed firestopping materials, systems, and/or devices for the buildings associated with this Contract.
   1. Through-penetrations of fire-resistance rated floor and roof construction associated with the new fire alarm system or sprinkler system installation.
   2. Through-penetrations of fire-resistance rated walls and partitions associated with the new fire alarm system or sprinkler system installation.

1.4 CONTRACTOR'S RESPONSIBILITIES

A. The Firestopping Contractor shall furnish all labor, materials, equipment, and services necessary for, and incidental to, the complete and proper installation of all UL Listed firestop systems described in Section 1.3.

B. The Firestopping Contractor shall sequence and coordinate the installation of all firestop systems with other trades to ensure efficient installation of all firestop systems.

C. The Firestopping Contractor shall coordinate construction and cutting of openings so that each particular firestop system may be installed in accordance with its listing, including sizing, sleeves, and penetrating items.

D. The Firestopping Contractor shall maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install firestop systems under environmental conditions outside manufacturer's absolute limits.

E. The Firestopping Contractor shall provide ventilation as required by firestopping material manufacturer, including mechanical ventilation if required.

1.5 QUALIFICATION OF BIDDERS

A. Installer Qualifications: A firm specializing in installation of firestop systems similar to those required for this project with a minimum of five (5) years of successful documented experience. The installer must also be licensed installer by the firestopping material manufacturer.

1.6 CODES AND STANDARDS

A. Rhode Island Fire Safety Code
B. Rhode Island State Building Code
C. All materials shall be listed for the intended use in Underwriters Laboratories, Inc. (UL), UL FRD Fire Resistance Directory.
D. If a UL listing for a specific device is unavailable, approval by FM Global (FM) or other nationally recognized testing laboratory (NRTL) acceptable to the City of Warwick shall be acceptable.
E. American Society for Testing and Materials (ASTM):
   1. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials
   2. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials
   3. ASTM E 814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops
   4. ASTM E 1399 - Standard Test Method for Cyclic Movement and Measuring the Minimum and Maximum Joint Widths of Architectural Joint Systems
   5. ASTM E 1529 - Standard Test Methods for Determining Effects of Large Hydrocarbon Pool Fires on Structural Members and Assemblies
   6. ASTM E 1725 - Standard Test Methods for Fire Tests of Fire-Resistive Barrier Systems for Electrical System Components
F. UL 1479 - Standard for Fire Tests of Through-Penetration Firestops
G. ANSI/UL 2079 - Tests for Fire Resistance of Building Joint Systems
H. Additional requirements of the Authority Having Jurisdiction (AHJ).

1.7 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary, apply to this Section.

1.8 ORDER OF PRECEDENCE

A. Should conflicts arise out of discrepancies between documents referenced in this specification, the most stringent requirement shall apply; however, should a level of stringency be indeterminable, the discrepancies shall be resolved as follows:
   1. State and local codes shall take precedence over this specification.
   2. The National Fire Protection Association Standards shall take precedence over this specification.
   3. This specification shall take precedence over the drawings

1.9 FIRESTOP SYSTEM PERFORMANCE CRITERIA

A. General: For the following constructions, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assembly penetrated.
   1. Fire-resistance-rated non-load-bearing walls, including partitions, with fire-protection rated openings.
   2. Fire-resistance-rated floor assemblies.
   3. Fire-resistance-rated roof assemblies.

B. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, as determined per ASTM E 814, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.

C. T-Rated Systems: For the following conditions, provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, as determined per ASTM E 814, where systems protect penetrating items exposed to potential contact with adjacent materials in occupiable floor areas:
   1. Penetrations located outside wall cavities.
   2. Penetrations located outside fire-resistive shaft enclosures.
   3. Penetrations located in construction containing fire-protection-rated openings.
   4. Penetrating items larger than 4-inch- (100-mm-) diameter nominal pipe or 16 sq. in. (100 sq. cm) in overall cross-sectional area.

D. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that after curing do not deteriorate when exposed to these conditions both during and after construction.
   1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
   2. For floor penetrations with annular spaces exceeding 4 inches (100 mm) in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved either by installing floor plates or by other means.
   3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

E. For through-penetration firestop systems exposed to view, provide products with flame-spread ratings of less than 25 and smoke-developed ratings of less than 450, as determined per ASTM E 84.

F. Through Penetration Firestop System For Electrical Penetrations: Provide firestop systems complying with UL system No.5, R11044, tested in accordance with UL 1709, ASTM E 119, ASTM E 1529, and ASTM E 1725.

1.10 SUBMITTALS

A. Refer to Division 1 for the exact quantity of submittals required.

B. Shop Drawings: For each different firestop system configuration, provide the following:
   1. Listing agency's detailed drawing showing opening, penetrating items, and firestopping materials, identified with listing agency's name and number or designation, fire rating achieved, and date of listing.
   2. Identify which rated assembly each system is to be used in.
   3. Any installation instructions that are not included on the detailed drawing.

4. For proposed systems that do not conform strictly to the listing, submit listing agency's drawing marked to show modifications and stamped approved by firestop system manufacturer's fire protection engineer.
5. Submit listing agency's test report showing compliance with requirements, based on testing of current products.

C. Product Certificates: Submit certificates signed by firestop system manufacturer certifying that materials furnished comply with requirements.

D. Product Data: Manufacturer's data sheets on each material to be used in firestop systems, including:
1. Product characteristics and Material Safety Data Sheets.
2. Listing numbers of systems in which each product is to be used.
3. Preparation instructions and recommendations.
4. Storage and handling requirements and recommendations.
5. Installation methods.

E. Installer's Qualification Documentation.

1.11 WARRANTY

A. The Contractor shall guarantee all material installed free from defects in workmanship and inherent mechanical defects for a period of one (1) year from the date of substantial completion of the project.

B. Upon completion of the installation of all firestop systems, the Contractor shall provide a signed written statement, substantially in the form as follows:

C. The warranty period will begin on the date of substantial completion of the project.

1.12 DELIVERY, STORAGE AND HANDLING

A. Deliver and store products until ready for installation in manufacturer's original unopened packaging, legibly marked with manufacturer's name and product identification, date of manufacture, lot number, shelf life, listing agency's classification marking, curing time, and mixing instructions if applicable.

B. Store and handle in such a manner as to prevent deterioration or damage due to moisture, temperature changes, contaminants, and other causes; follow manufacturer's instructions.

C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local AHJ.

1.13 DEFINITIONS

A. Construction Gap: An open joint between adjacent rated assemblies; may be a moving joint or static opening, without penetrating items.

B. Firestop System: Specific firestopping material or materials, which when installed in openings in a specific rated assembly, achieve the performance required.

C. Firestop: Result of installation of firestop system.

D. Listing: The current, published listing of a system in a NRTL agency's directory.

E. Penetrating Item: Any item (pipe, duct, conduit, cable, etc.) that passes completely through a rated assembly through an opening of any size.

F. Rated Assembly: A wall, floor, roof/ceiling, or other construction, which is required to have an hourly fire rating or a smoke resistance rating.

G. Through Penetration: A hole through a rated assembly made to accommodate the passage of a penetrating item or an empty hole made for another purpose and not repairable using the original materials of construction.

2.0 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer's:

1. 3M Fire Protection Products, Inc, St. Paul, MN
2. Nelson Fire Stop, Tulsa, OK
3. Hilti, Tulsa, OK
4. Johns Manville, Denver, CO
5. Tremco, Cleveland, OH
6. The Rectorseal Corp., Houston, TX
7. Specified Technologies Inc., Somerville, NJ

B. Single Source: All instances of a specific firestop system shall be made using products of the same manufacturer.

2.2 MATERIALS

A. Sealants,

B. Mortar,

C. Compound,

D. Putty, putty pads, and inserts,

E. Compounds,

F. Spray mastics,

G. Intumescent wrap strips and collars,

H. Firestop pillows and collars,

I. Cable and joint spray,

J. Forming materials.

2.3 ALL FIRESTOPPING MATERIALS

A. Listing Agency: Provide systems that are listed by at least one the following:
   1. Underwriters Laboratories Inc. (UL), in "Fire Resistance Directory" category XHEZ or XHBN as appropriate.
   2. Any other qualified independent testing and inspection agency that conducts periodic follow-up inspections and is acceptable to authorities having jurisdiction.
      a. Furnish products identical to those tested for classification by listing agency.
      b. Mark product packing with classification marking of listing agency.
      c. Unlisted Systems: Where firestop systems not listed by any listing agency are required due to project conditions, submit a substitution proposal with evidence specified.
      d. Firestopping Exposed To View: Provide products with flame spread index of less than 25 and smoke developed index of less than 450, when tested in accordance with ASTM E 84.
      e. Firestopping Exposed to View, Traffic, Moisture, or Physical Damage: Provide products that after curing do not deteriorate when exposed to those conditions during and after construction.
      f. Materials: Use only products specifically listed for use in listed systems.
      g. Compatibility: Provide products that are compatible with each other, with the substrates forming openings, and with the items, if any, penetrating the firestopping, under the conditions represented by this project, based on testing and field performance demonstrated by manufacturer.

B. Accessories: Provide all accessory materials required for complete installation; use materials specifically identified in system listings.

C. Identification Labels for Through Penetration Systems: Pressure sensitive self-adhesive vinyl labels, preprinted with the following information:

D. The words "Warning - Through Penetration Firestop System - Do not Disturb. Notify Building Management of Any Damage."
   1. Listing agency's system number or designation.
   2. System manufacturer's name, address, and phone number.
   3. Installer's name, address, and phone number.
   4. General contractor's name, address, and phone number (if applicable).
   5. Date of installation.

3.0 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. Conduct tests according to manufacturer's written recommendations to verify that substrates are free of oil, grease, rolling compounds, incompatible primers, loose mill scale, dirt and other foreign substances capable of impairing bond of firestopping.

C. Verify that items penetrating fire rated assemblies are securely attached, including sleeves, supports, hangers, and clips.

D. Verify that openings and adjacent areas are not obstructed by construction that would interfere with installation of firestopping, including ducts, piping, equipment, and other suspended construction.

E. Verify that environmental conditions are safe and suitable for installation of firestopping.

F. If substrate preparation is the responsibility of another installer, notify Engineer of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Prepare substrates in accordance with manufacturer's instructions and recommendations.

B. Install masking and temporary coverings as required to prevent contamination or defacement of adjacent surfaces due to firestopping installation.

3.3 INSTALLATION

A. Install in strict accordance with manufacturer's detailed installation instructions and procedures.

B. Install so that openings are completely filled and material is securely adhered.

C. Where firestopping surface will be exposed to view, finish to a smooth, uniform surface flush with adjacent surfaces.

D. After installation is complete, remove combustible forming materials and accessories that are not part of the listed system.

E. Repair or replace defective installations to comply with requirements.

F. At each through penetration, attach identification labels on both sides in location where label will be visible to anyone seeking to remove penetrating items or firestopping.

G. Clean firestop materials off surfaces adjacent to openings as work progresses, using methods and cleaning materials approved in writing by firestop system manufacturer and which will not damage the surfaces being cleaned.

H. Notify AHJ when firestopping installation is ready for inspection; obtain advance approval of anticipated inspection dates and phasing, if any, required to allow subsequent construction to proceed.

I. Do not cover firestopping with other construction until approval of AHJ has been received.

3.4 FIELD QUALITY CONTROL

A. Owner may engage an independent testing agency to inspect installed firestopping and to prepare reports indicating whether the installed work complies with the contract documents.

B. Notify testing agency at least 7 days prior to date when firestopping installation will be ready for inspection; obtain advance approval of general schedule and phasing, if any, required to allow subsequent construction to proceed.

3.5 PROTECTION

A. Protect installed systems and products until completion of project; where subject to traffic, provide adequate protection board.

B. Touch-up, repair or replace damaged systems and products before Substantial Completion.

END OF SECTION 07840

SECTION 16720 – ADDRESSABLE FIRE ALARM SYSTEM

1.0 GENERAL

1.1 Related Documents

A. Drawings and general provisions of the Contract and Agreement apply to this Section.

B. Project Manual

1.2 Summary

A. Drawings supplied with this specification shall be used as a reference for the requirement and location of system components. Work includes visiting the site to observe the existing conditions, and confirmation of the required quantities of devices and specific options for locations of the same.

B. At the time of bid, all exceptions taken to these Specifications, variances from these Specifications and all substitutions of equipment specified shall be listed in writing and forwarded to JENSEN HUGHES (Engineer) and the City of Warwick (Owner). Any such exceptions, variances, or substitutions, which were not listed at the time of bid shall not be approved or considered.

C. The Work includes all labor, materials, services, software, programming, tools, transportation, and temporary construction necessary to fabricate, install, program and test a fully operational and code compliant UL Listed addressable fire alarm system as defined in the Rhode Island Fire Safety Code (RIFSC) system in Fire Station 2 (771 Post Road), Fire Station 5 (450 Cowesett Road), Fire Station 8 (1651 Post Road), and Fire Station 9 (314 Commonwealth Avenue). Work includes installing a new Honeywell fire network adapter in each building, as shown on provided plans. Fire network adapter to be installed in location noted on Contract Documents. Work includes installing new CAT5e plenum cable from the existing network switch to the fire network adapter in each building. Twisted pair wire shall be run from fire alarm control unit to the fire network adapter in each building, per manufacturer's recommendations. The Contractor shall provide 24VDC power to newly installed fire network adapter. Included in the scope of work is programming of both the fire alarm control unit and the Honeywell Enterprise Building Integrator located off-site. Phase V does not require the purchase of additional addressable points. All addressable points for the City of Warwick Fire Alarm Upgrades Phase V shall be used from addressable points purchased in the previous Phase IV contract. The Contractor shall notify the Owner and Engineer where an insufficient number of addressable points are available in the City of Warwick's total addressable points.

D. The work includes maintaining the municipal connection in Fire Station 5 and Fire Station 8. New addressable control module to be installed for initiating each Masterbox zone, as identified in the sequence of operations. Control modules used for initiating Masterbox zones shall be isolated from the rest of the SLC using fault isolation modules. Include any additional programming to transmit all alarms to the Warwick Fire Department. The following shall be reported for each building:
   a) Fire Station 5 – General Alarm
   b) Fire Station 8 – General Alarm, Main Waterflow and Sprinkler Tamper Activation

E. The Work includes all labor, materials, services, tools, transportation, and temporary construction necessary to remove the existing building fire alarm system equipment in the manner and to the extent indicated herein upon final acceptance of the new fire alarm system.

F. The Work includes all fees and activities required to secure approvals for necessary State and Local permits.

G. The Work includes submitting detailed Shop Drawing Plans, Wiring Diagrams, Calculations and Product Data to the Engineer for review prior to submitting same to local officials (as required) for approval and permit.

H. The Work includes performing field quality control activities.

I. The Work includes documenting and submitting the results of integrity and functional testing.

J. The Work includes performing an overall system, full-day test of the System prior to the "Pre-Acceptance" test.

K. The Work includes performing an overall system "Pre-Acceptance" test(s) for the Owner's and Engineer's approval.

L. The Work includes performing an overall system "Final Acceptance" test(s) for Authority approval.

M. The Work includes submitting As-built Plans and closeout documentation to the Engineer for review prior to scheduling Owner demonstration training.

N. The Work includes training Owner's personnel on the operation of the system, required maintenance tasks and frequencies, and the locations of all equipment necessary to maintain and operate the fire alarm system.

1.3 Performance Requirements

A. 24 VDC closed-circuit, electrically supervised, addressable, automatic fire alarm system. The system shall include, but not be limited to:

1. Fire alarm control unit (FACU).

2. Fire alarm system power supplies.

3. Addressable double-action manual fire alarm boxes at all building exits as shown on the drawings.

4. Photoelectric, addressable analog automatic smoke detectors (in those environments suitable for proper smoke detector operation), as indicated in this section and where shown on the drawings.

   a. Immediate Vicinity of Fire Alarm Control Equipment: System type, analog, addressable, photoelectric smoke detectors with standard bases located in the immediate vicinity of all fire alarm control equipment including remote power supplies and remote amplifiers.

b. Common Corridors, common rooms and stairwell landings, System type, analog, addressable, photoelectric smoke detectors with standard bases located in common corridors and within each stairwell at every floor level.

c. Where an area is environmentally unstable such that a smoke detector could experience high levels of dust or temperature variations above 100° F or below 32° F and the area in question is protected by an automatic sprinkler system, smoke detectors shall be omitted. If an automatic sprinkler does not protect the area, an addressable heat detector shall be installed.

5. Audible and visible notification appliances (horn/strobe, horn only, and strobe only notification appliances) in common spaces, common bathrooms, as shown on the drawings.

6. Addressable monitor modules and addressable control relay modules, as shown on the drawings and described in this specification.

1.4 Order of Precedence

A. Should conflicts arise out of discrepancies between documents referenced in this specification, the most stringent requirement shall apply; however, should a level of stringency be indeterminable, the discrepancies shall be resolved as follows:

1. State and local codes shall take precedence over this specification.

2. The National Fire Protection Association Standards shall take precedence over this specification.

3. This specification shall take precedence over the drawings.

1.5 Submittals

A. Pre-Installation Documentation:

1. Product Data: For each product specified in Part 2. Submittal shall indicate listing and approvals, selected options and electrical characteristics.

2. Equipment List: Identify type, quantity, make and model number of each piece of equipment (including spare components) included in submittal. Types and quantities of equipment indicated shall coincide with the types and quantities of equipment used in the battery calculations and those shown on the shop drawings.

3. Shop Drawing Plans: Corresponding riser diagram inclusive of information required by NFPA 72-2010 requirements.

4. Wiring Diagrams: Point-to-point fire alarm control equipment installation diagrams inclusive of information required by NFPA 72-2010 requirements.

5. Battery Calculations: Prepared in accordance with NFPA 72-2010 requirements and showing total standby power and total alarm power required to meet the specified system

requirements. Include a complete list of current requirements during normal, supervisory, trouble, and alarm conditions for each component of the system.

6. NAC circuit loading calculations.

7. Voltage-drop Calculations: Prepared in accordance with NFPA 72-2010 requirements to demonstrate that the system will operate per the prescribed backup time periods and under all voltage conditions per UL and NFPA standards.

8. Sequence of Operation: A sequence of operation that describes how the system responds during an alarm, supervisory and trouble condition. The description shall include fire alarm control unit LEDs, audible and visible indications; initiating devices, notification appliances, and auxiliary functions. The description shall provide sufficient information so that the exact function of each installed device and appliance is known.

9. Statement of Equipment Lifecycle: A written statement, signed by a representative of the equipment manufacturer stating that the equipment to be supplied is not at or near the end of its life cycle and that replacement components for all control equipment shall be available from the manufacturer for a minimum of 15 years from the date of installation.

B. Pre-Programming Documentation:

1. Device Address List: Indicating proposed label verbiage for each address.

C. Pre-Acceptance Documentation:

1. As-Built Drawings: Showing all field changes from original Shop Drawing Plan submittal. Drawings shall include:

   a. The exact locations and installation details of all equipment installed including the FACU(s), remote power supplies, all initiating devices, monitor modules, control modules and fault isolator modules with the address of each addressed device and all notification appliances.

   b. The installed wiring and color-coding and wire tag notifications for the exact locations of all installed junction boxes and terminal cabinets.

   c. Specific point-to-point interconnections between all equipment and internal wiring of the equipment. Typical point-to-point wiring diagrams are not acceptable.

2. Preliminary test report indicating that all devices and appliances within the building have been tested in accordance with NFPA 72-2010 guidelines.

3. Preliminary Record of Completion: Prepared in accordance with NFPA 72-2010 §4.5.2.1(a).

4. Statement of Completion; to indicate that system installation, field quality control and commissioning is complete, a signed written statement, substantially in the form as follows:

   "The undersigned, having been engaged as the Fire Alarm Contractor for the fire alarm systems at Fire Station 2 (771 Post Road), Fire Station 5 (450 Cowesett Road), Fire Sta-

tion 8 (1651 Post Road), and Fire Station 9 (314 Commonwealth Avenue) for the Warwick Municipal Buildings Fire Alarm Upgrade Project located in Warwick, Rhode Island, confirms that the fire alarm system equipment has been installed in accordance with the system manufacturer's wiring diagrams, installation instructions and technical specifications provided to us by the manufacturer and the City of Warwick. Field quality control procedures are complete, system indicators are normal, and the system is suitable for demonstration testing."

D. Final Acceptance Documentation:

1. As-Built Drawings: With final revisions per Engineer's comments.

2. Final Record of Completion: Prepared in accordance with NFPA 72-2010.

3. Test Reports: From Pre-Acceptance testing; substantially in the format and inclusive of information required by NFPA 72-2010 Figure 10.6.2.3.

E. Closeout Documentation:

1. Maintenance Data: Operating and Maintenance Manual to include the following:

a. Final Equipment List identifying the quantities and types of equipment listed by manufacturer's part number.

b. Detailed narrative description of the system inputs, evacuation signaling, ancillary functions, annunciation, sequence of operations, expansion capability, application considerations, and limitations.

c. Product datasheet (or specification sheet) for each piece of fire alarm system equipment installed.

d. Operator instructions for basic system operations, including alarm acknowledgement, system reset, interpretation of system output, operation of manual evacuation signaling and ancillary function controls.

e. Standby power calculations and voltage drop calculations that coincide with the equipment that has been installed in the building.

f. Point ID list referencing the signaling line circuit loops and the devices on those loops.

g. Sensitivity report for all smoke detectors at the time of acceptance.

h. Testing results of all wiring free from faults, as specified in this specification.

i. Detailed description of routine maintenance and testing as required and recommended and as would be provided under a maintenance contract, including testing and maintenance instructions for each type of device installed.

1) This information shall include manuals that outline inspection, testing and cleaning procedures for all detectors and control equipment, as well as any

other special maintenance procedures for any other pieces of fire alarm system equipment installed in the buildings.

j. Detailed troubleshooting instructions for each trouble condition generated from the monitored field wiring, including opens, grounds, and loop failures.

1) These instructions shall include a list of all trouble signals annunciated by the system, a description of the condition(s) that causes such trouble signals, and step-by-step instructions describing how to isolate such problems and correct them (or how to call for service, as appropriate).

k. A service directory, including a list of names and telephone numbers of those who provide service for the system.

2. Documentation of programming with the disks containing the programming information. Include necessary non-disclosure agreement or licensing agreement.

3. Electronic As-Built Drawings: Submit electronic AutoCAD files on compact disk. Coordinate AutoCAD version with Owner at time of submittal.

4. Statement of Warranty.

1.6 Coordination

A. Coordinate the installation of the fire alarm system and testing of associated equipment and circuits with all related trades, contractors, equipment maintenance and testing representatives, the Engineer, the Owner and the authorities having jurisdiction.

B. Emergency Generator. The contractor shall coordinate the installation of addressable monitor modules for monitoring of the emergency generator. The Contractor shall coordinate the location with the automatic transfer switch.

C. Air Handling Units (AHU). The contractor shall coordinate the installation of duct smoke detectors, remote test switches and addressable control modules for automatic AHU shutdown with the HVAC Contractor. The Contractor shall coordinate with the HVAC contractor to verify AHU shutdown operations function successfully as specified in this specification.

1.7 Quality Assurance

A. Each component of the fire alarm system shall be listed as a product of a single fire alarm system manufacturer under the appropriate category for the intended use in Underwriters Laboratories, Inc. (UL), UL FPED *Fire Protection Equipment Directory*, 2014 Edition. All control equipment shall be listed under UL category UOJZ Control Units System as a single unit. Partial listings, or multiple listings for various major sections of the control equipment, shall not be acceptable.

B. If a UL listing for a specific device is unavailable, approval by FM Global (FM) or other nationally recognized testing laboratory (NRTL) acceptable to the Owner and the Engineer shall be acceptable.

C. Electrical components, devices, and accessories shall be Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

D. All control equipment shall have transient protection devices that comply with the requirements outlined in UL 864, *Standard for Control Units for Fire-Protective Signaling Systems*.

E. All materials and equipment (initiating devices, notification appliances, etc.) shall be new and unused.

F. All equipment supplied shall be first quality and the manufacturer's best type and latest model capable of complying with all requirements of this specification and shall have been in continuous production and in continuous service in commercial applications for at least one year. Obsolete equipment shall not be used.

G. Installer Qualifications:

1. Licensed in the State of Rhode Island and be experienced in the installation of fire alarm systems in buildings similar to the Work described herein and has obtained design and inspection approvals for similar projects from Authorities Having Jurisdiction (AHJ).

2. Foreman: Provide proof of competence of both their company and the individual foreman that will be assigned to this project, in the area of installing fire detection, alarm, and control systems for at least five (5) years and acceptable to the Owner. Once assigned, the Contractor's foreman shall not be changed without the approval of the Owner.

H. The fire alarm system shall comply with all applicable state and local codes including the Rhode Island Fire Safety Code.

I. Buildings accessible to the disabled or impaired shall comply with the provisions of the *Americans with Disabilities Act Accessibility Guidelines (ADAAG)*.

J. Products, installation and testing shall be in accordance with the applicable provisions of the following:

1. NFPA 1, *Fire Code,* 2012 Edition, as amended.

2. NFPA 13, *Standard for the Installation of Sprinkler Systems*, 2010 Edition.

3. NFPA 70, *National Electrical Code*, 2011 Edition.

4. NFPA 72, *National Fire Alarm Code*, 2010 Edition.

5. NFPA 101, *Life Safety Code*, 2012 Edition, as amended.

K. The requirements and recommendations of the latest published edition of the equipment manufacturers' product datasheets, technical specifications, installation instructions and wiring guidelines shall be followed.

1.8 Scheduling

A. The Contractor's Foreman shall act as primary point of contact and responsible-in-charge for coordinating the Pre-Acceptance Test with the other portions of the Work, Owner and the Engineer.

B. The Contractor's Foreman shall act as primary point of contact and responsible-in-charge for coordinating the Final-Acceptance Test with the other portions of the Work, Owner, Engineer and Authorities.

1.9 Warranty

A. The Contractor shall guarantee all new equipment installed and new raceways, new wiring and connections to existing wiring from defects in workmanship and inherent mechanical and electrical defects for a period of one (1) year from the date of substantial completion of the project. See Part 1 "Submittals".

B. The Manufacturer or the authorized representative shall guarantee all new system equipment for a period of two (2) years from the date of substantial completion of the project. See Part 1 "Submittals".

2.0 PRODUCTS

2.1 Manufacturers

A. Fire alarm system control equipment shall be manufactured by:

1. Honeywell XLS120

B. Distributors of acceptable manufacturer's equipment shall provide documentation indicating that they are authorized by the manufacturer to distribute and service the equipment and that the manufacturer has stated that they have satisfactorily completed all training courses offered by the manufacturer in relation to the equipment provided.

2.2 Functional Description of the System

A. The system shall include new control/communications equipment which is UL Listed to operate with the submitted manual fire alarm boxes and smoke detectors, and shall alert building occupants using audible and visible notification appliances, supervise each system for conditions which would impair proper system operation, annunciate such abnormal conditions, and where applicable, control related equipment as indicated on contract documents.

B. Alarm Condition

1. The system operation shall be such that the alarm operation of any alarm initiating device shall not prevent the subsequent alarm operation of any other initiating device due to wiring or power limitations.

2. The system alarm operation subsequent to the alarm activation of any manual fire alarm box, any system-type automatic detection device (smoke or heat detector), operation of a fixed suppression system or sprinkler waterflow switch shall automatically perform the functions contained in this section and operate as follows:

   a. The evacuation signal (temporal code 3 National Evacuation Signal) and all visible notification appliances (flashing in synchronization) shall activate throughout the building. This shall be repeated until the system is reset.

      1) All strobe notification appliances shall operate in synchronization in accordance with the requirements of NFPA 72.

   b. The general alarm shall immediately be transmitted to the Warwick Fire Department in Fire Station 5 and Fire Station 8.

3. Fire Alarm Control Unit Indication

   a. Alarm conditions shall be immediately displayed on the control unit alphanumeric display, indicating all information associated with the fire alarm condition including type of device, its location and the time and date of activation. The red "ALARM" LED shall flash on the control unit until the alarm has been acknowledged. Once acknowledged, this same LED shall latch on. A subsequent alarm received from another initiating device after acknowledgment shall flash the alarm LED on the control unit and the display shall show the new alarm information.

   b. During an alarm condition, a pulsing alarm tone shall sound within the control until the alarm is acknowledged.

   c. If the audible alarm signals are silenced for any reason, they shall automatically resound if another initiating device is actuated.

   d. When the alarm signals are silenced by pressing the "ACKNOWLEDGE" pushbutton on the control module, the control unit LED's shall continue to flash until the alarm is reset at the control unit.

   e. The alarm sequence shall be recorded with the time and date of all occurrences in the fire alarm system History Log.

4. Auxiliary Functions

   a. Where applicable, all auxiliary functions shall be connected to and operated by the control unit.

   b. Automatic AHU shutdown. All AHU units greater than 2000 CFM shall automatically shut down upon general alarm.

   c. Magnetic door holder release. Upon receipt of an alarm from any initiating device or loss of power, magnetic door hold-open devices (as shown on the drawings) shall release, allowing the held open door to automatically close.

C. Supervisory Condition

1. The control unit shall have a "SYSTEM SUPERVISORY" LED and a supervisory signal "ACKNOWLEDGE" switch.

2. When a supervisory condition is detected, the following functions shall immediately occur:

   a. The "SYSTEM SUPERVISORY" LED shall flash.

   b. A pulsing alarm tone in the control unit shall sound.

   c. The display shall indicate all information associated with the supervisory condition, including device, its location within the protected premises, and the time and date of that activation.

   d. If more supervisory signals are in the system, the operator shall be able to scroll the display to view new signals.

   e. All system output programs assigned via control-by-event equations to be activated by the particular point monitored shall be executed, and the associated system outputs (Supervisory Notification Appliances and/or relays) shall be activated.

3. Unacknowledged alarm messages shall have priority over supervisory messages, and if an Alarm occurs during a supervisory sequence, the Alarm condition shall have display priority.

4. Activating the supervisory "ACKNOWLEDGE" switch shall silence the audible signal while maintaining an LED on, indicating the supervisory condition is still in the off-normal state.

5. Restoring the valve or supervisory contact to the normal position shall cause the supervisory service audible signal to pulse thus indicating restoration to normal position. Activating the "ACKNOWLEDGE" switch shall silence the audible signal and restore the system to normal.

6. The following shall activate an audible supervisory signal and illuminate the supervisory LED at the control unit.

   a. Generator running.

D. Trouble Condition

1. When a trouble condition is detected, the following functions shall immediately occur:

   a. An amber "SYSTEM TROUBLE" LED shall light and the system audible signal shall steadily sound when any trouble is detected in the system. Failure of normal power, opens or short circuits on the signaling line circuits or the notification appliance circuits, disarrangements in system wiring, failure of the microprocessor or any identification module, or system ground faults shall activate this trouble circuit.

b. A trouble signal may be acknowledged by actuating the "ACKNOWLEDGE" switch. This shall silence the control unit trouble buzzer. If additional trouble conditions occur, the trouble circuitry shall resound.

c. During an "alarm" condition, all "trouble" signals shall be suppressed with the exception of lighting the amber "COMMON TROUBLE" LED steadily.

d. The display shall indicate all information associated with the trouble condition, including type of trouble point, its location within the protected premises, and the time and date of that activation.

e. All system output programs assigned via control-by-event equations to be activated by the particular point in trouble shall be executed, and the associated System Outputs (Trouble Notification Appliances and/or relays) shall be activated.

2. Unacknowledged alarm messages shall have priority over trouble messages, and if such an Alarm occurs during a Trouble sequence, the Alarm condition shall have display priority.

E. System Supervision

1. All wiring extending from the FACU enclosure to fire alarm system components shall be supervised for opens, shorts and grounds. Systems containing unsupervised wiring of any type shall not be acceptable.

2. The occurrence of any fault shall activate the system trouble circuitry, but shall not interfere with the proper operation of any circuit that does not have a fault condition.

3. Incoming 120 VAC line power shall be supervised so that any power failure shall be audibly and visually indicated at the control unit.

4. Batteries shall be supervised so that a low battery condition or disconnection of the battery shall be audibly and visually indicated at the control unit.

F. System Reset

1. A "SYSTEM RESET" button shall be used to return the system to its normal state after an alarm condition has been remedied. Printed messages shall provide operator assurance of the sequential steps (i.e.: "IN PROGRESS", "RESET COMPLETED") as they occur, should all alarm conditions be cleared.

2. Should an alarm condition continue to exist, the system shall remain in an abnormal state. System control relays shall not reset. The control unit "ALARM" LED shall remain on. These points shall not require acknowledgment if they were previously acknowledged.

2.3 Minimum Components

A. The automatic fire detection and alarm system shall consist of, but not be limited to:

1. Fire alarm control unit (FACU).

2. Input Devices (waterflow switches and valve supervisory switches).

3. Addressable, analog photoelectric smoke detectors, with standard bases.

4. Addressable, analog photoelectric smoke detectors in sleeping units, with sounder base capable of producing a Temporal 3 tone. Sleeping unit smokes are not to be interconnected and are not to initiate general alarm, as noted in the Sequence of Operations Matrix.

5. Addressable, analog combination photoelectric smoke detector and carbon monoxide detector, with sounder base capable of producing a Temporal 3 or Temporal 4 tone. Combination smoke/CO detectors in sleeping units are not to be interconnected and are not to initiate general alarm on Smoke or CO alarm, as noted in the Sequence of Operations Matrix. Where a corridor smoke detector is a combination smoke/CO detector, smoke alarm shall initiate general alarm, but CO alarm shall produce a Temporal 4 tone via the sounder base.

6. Addressable double-action manual fire alarm boxes.

7. Addressable monitor modules and control relay output modules.

8. Fault Isolator Modules.

9. Annunciation at the FACU and remote LCD annunciators, as shown on the drawings.

10. A permanent record of the alarm signal, time, and date.

11. Audible and visible notification appliances.

12. Battery backup supervision.

13. Automatic supervision of alarm initiating circuits and notification appliance circuits.

14. Transmission of alarm signals to the Warwick Fire Department, where municipally-connected.

15. Existing radio Masterbox, where applicable.

2.4 Fire Alarm Control Unit (FACU)

A. The FACU shall provide power, English display status, supervision, control, and programming capability for the fire detection and alarm system.

B. The control unit shall be in a location approved by the Engineer, the Owner and the AHJ as shown on the drawings.

C. The control unit shall store a record of alarm and trouble events in a nonvolatile history file. This file shall contain, at least, the most recent 500 events, with time and date of each event. It shall be possible to select the number of events to be viewed in the history file so that the entire

file does not have to be downloaded. The history file shall remain intact in the event of a loss of AC and battery power.

D. The control unit shall contain a minimum of one (1) signaling line circuits. Each signaling line circuit shall support a minimum of 100 addressable input devices or addressable monitor modules and a minimum of 10 output devices. All addressable input and output devices shall be capable of being intermixed on the same signaling line circuit.

E. A minimum of two (2) signaling line circuits shall be used within each building with devices equally distributed on each circuit. Each signaling line circuit shall be loaded to no more than 75% of its manufacturer specified capacity. Additional SLCs shall be furnished and installed as necessary to comply with this requirement.

F. A minimum of three fault isolator modules shall be used on each signaling line circuit. One fault isolator module shall be installed at the point the SLC leaves the FACU and at the point where new installed Class A SLCs return to the FACU. Fault isolator modules shall be placed in order to minimize loss of addressable devices. Fault isolator modules shall be placed at each floor, where the SLC spans multiple floors. No more than 25 devices shall be installed on a circuit between fault isolators.

G. The fire alarm system shall provide a minimum of one (1) visible (strobe) notification appliance circuit (NAC). Each circuit's power load shall not exceed 75% of the individual circuit power available from the FACU and new installed circuits shall be Class A circuits. Additional NACs shall be furnished and installed as necessary to comply with this requirement.

H. Power for all notification appliances shall come from integral power supplies in the control unit. Remote power supplies shall be provided as needed and shall be of the same manufacturer as the FACU. All locations containing remote control equipment (such as a power supply extender) shall be protected with a smoke detector, in accordance with NFPA 72.

I. The functional operation of the control unit shall be established by programmable software.

1. The operating program shall be contained in nonvolatile EEPROM memory and shall be configurable in any of the following ways:

a. At the factory;

b. At the job site via modem; or

c. At the job site via standard terminal or standard laptop computer.

J. Access and control of the operating program shall be restricted to proper personnel designated by the Owner

1. The control unit shall have a minimum of three (3) security levels, and they shall be designated: "ELECTRICIAN", "ALARM SYSTEM SERVICE TECHNICIAN", and "MANUFACTURER." Each level shall have individual passwords. Illegal access attempts shall be rejected by the system and shall be displayed and recorded in the history file with time and date.

2. The "ELECTRICIAN" security level shall be the lowest security level and shall only allow access to the system status levels and lists and shall not impair system operation.

3. The "MANUFACTURER" and "ALARM SYSTEM SERVICE TECHNICIAN" security levels shall allow access to the operating system.

4. Accessing a programming function that disables normal system operation shall initiate a trouble sequence.

K. The fire alarm control unit, all remote annunciators, and remote power supplies shall contain an integral standby battery to provide continuous power in the event of AC power failure.

1. The batteries shall be capable of providing 24 hours of backup power for all local systems and 60 hours of backup power for all municipally-connected systems. Enough power shall remain to operate all notification appliances for 5 minutes at the end of the specified 24 or 60 hour period, as applicable.

2. The calculations for battery standby shall include a "safety factor" (reserve power estimate) of a minimum 15%.

3. Transfer from AC to battery power shall be instantaneous when AC voltage drops below 85 percent input. Transfer to battery standby shall be indicated by display and recorded in the history file with time and date. The indication shall be "AC OFF".

4. Loss of building power for the system shall automatically and immediately cause transfer of the system to battery power and cause all audible trouble signals to sound. Upon return of building power, the system shall automatically retransfer thereto, and the batteries shall automatically recharge.

5. During battery operation, the control unit shall process all inputs. However, the display shall provide five (5) seconds of indication for each new input condition, then turn off to conserve battery power.

6. The control unit shall have a dual rate battery charger that shall maintain the batteries in a fully charged condition and shall provide recharge of the batteries to full capacity in forty-eight (48) hours.

L. The control unit shall provide a nonprogrammable DPDT common alarm relay and common trouble relay both with contacts rated 2 AMP at 24 VDC.

M. Output Function Modules. The control unit shall utilize output function modules to control output functions. The modules shall plug into the control unit motherboard. The functions and presence of each module shall be supervised, and "ELECTRICIAN" password shall enable the user to request a list that locates the module by panel and slot within system. All modules shall be individually programmable by circuit as hereinafter specified.

1. Addressable control relays shall be provided for each of the auxiliary functions; field verify quantities and locations.

2.5 Wiring

A. Wiring for the initiating devices, notification appliances and remote 80 character LCD display shall be solid copper and shall comply with the appropriate sections of the *National Electrical Code* and the RILSC. All system wiring size shall be as determined suitable by the manufac-

turer and in compliance with the *National Electrical Code*, yet they shall not be any smaller than 16AWG.

B. Shielded wire shall be used only as directed by the FACU manufacturer.

C. All wiring shall be installed in metal raceway.

D. The minimum separation between the outgoing and return circuits shall be a minimum of 1-foot vertically and 4-foot horizontally where practical.

E. Twisted pair shall be used as directed by the FACU manufacturer.

F. MC cable shall only be installed where wiring is concealed.

2.6 System Field Devices - General

A. Addressable devices shall operate under the following ranges of environmental conditions:

1. Ambient Temperature: 32-100 degrees Fahrenheit.
2. Relative humidity: 0-93 percent, non-condensing.
3. Air velocity: 300 feet per minute.

B. Each addressable device shall include a means to assign a unique address code to the device in the field. This address code shall serve as the means by which the system program recognizes the device.

C. Failure of any single device shall not hinder the operation of any other devices connected to the signaling line circuit.

D. Failure of the control unit to properly communicate with any addressable device shall initiate the proper trouble sequence. While in this trouble condition, the control unit shall cause actual alarm input from devices to override trouble alarm.

2.7 Automatic Detectors – General

A. All automatic smoke detectors shall be of the addressable, analog photoelectric type and shall be interchangeably mounted into a common twist-lock base.

B. The control unit shall recognize changes of detector type in each location and provide proper indication that reprogramming for the affected address is required.

2.8 Addressable Photoelectric Smoke Detectors

A. Addressable analog photoelectric smoke detectors with standard base shall be installed in all common corridors and in the vicinity of all fire alarm system control equipment, in accordance with this specification and as shown on the drawings. Unless otherwise shown on the drawings, these common area detectors shall be spaced at thirty (30) foot centers, and spaced in accord-

ance with NFPA 72 and the manufacturer's installation instructions. Smoke detectors shall only be installed in those environments suitable for proper smoke detector operation.

B. UL 268, photoelectric smoke detector with general alarm setting in all common spaces of 3.0% - 4.0% per foot obscuration.

C. The detectors shall provide a combination alarm/power LED. The LED shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control unit. The LED shall be placed into steady illumination under an alarm condition. An output connection shall also be provided in the base to connect an external remote alarm LED. The mounting location of every device shall be approved by the Owner.

D. Addressable Photoelectric Smoke Detectors shall be Honeywell Model TC806B Photo Detector. Duct Detector housing shall be Honeywell Model DNR Duct Detector.

2.9 Detector Bases

A. Automatic detectors shall utilize a common, plug-in, twist-lock, tamper-resistant type base that accommodates photoelectric and thermal detectors. Detectors shall be interchangeable to simplify field conversion.

B. Provide bases constructed of white, high impact polycarbonate designed for mounting on a standard 3-1/2 inch or 4 inch octagonal or 4-inch square outlet box. Provide screw terminal connections for No. 14 AWG wire.

C. Removal of the detector from the base shall cause a trouble indication at the FACU. Removal of the detector shall not disrupt the alarm circuit wiring or prevent the receipt of alarms from other devices operating in the circuit.

D. Insertion of an incorrect detector type into the base shall cause a "Wrong Device" trouble condition at the FACU until the proper type of detector is installed, or the system is reprogrammed. The system program shall recognize the insertion of a wrong device and shall automatically default to the setpoint values corresponding to the inserted device, and shall monitor alarm and trouble conditions according to the default parameters.

E. Where noted on Contract Documents the following model shall be provided per application:
   1. Combination Smoke/CO Detector – B200S – Capable of producing Temporal 3 and Temporal 4 Alarm Tones.
   2. Sleeping Area Smoke Detector – B200SLF – Capable of producing a low frequency 520 +/- 10% Hz square wave Temporal 3 Tone.
   3. Combination Smoke/CO Detector in Sleeping Area – B200SLF – Capable of producing a low frequency 520 +/- 10% Hz square wave Temporal 3 and Temporal 4 Alarm Tones.

F. B200S Detector Base to be provided supervised 24 VDC power from the Fire Alarm Control Unit or 24VDC Power Supply.

2.10 Addressable Manual Fire Alarm Boxes

A. Manual fire alarm boxes shall be UL 38 non-coded, double-action type, surface or semi-flush mounted, with integral contact monitor module to provide addressable operation.

B. Faceplates shall be red with raised white identification lettering.

C. Stations shall mechanically latch after operation, with a key operated reset feature, keyed the same as FACU.

D. Addressable Manual Fire Alarm Boxes shall be Honeywell Model S464G.

2.11 Remote Fire Alarm Test Stations

A. Remote fire alarm test stations shall be installed to test fire alarm devices including but not limited to line-type heat detection, beam smoke detectors and duct smoke detectors.

B. Remote test stations shall be keyed with LED indicator.

2.12 Addressable Monitor Modules

A. Each addressable monitor module shall be able to support any number of normally open (N/O) devices. Wiring to the devices(s) being monitored shall be Class A supervised. Module status (normal, alarm, supervisory, trouble) shall be transmitted to the FACU.

B. Addressable monitor modules shall include a mounting plate for installation in a junction box or shall be mounted in a locked cabinet or approved box, as shown on the manufacturers recommended specifications.

C. The addressable monitor modules shall provide address-setting means.

D. An LED shall be provided which shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control unit.

E. In areas with multiple monitor modules, they shall be installed in monitor module cabinets approved by HAI and the Owner.

F. Addressable Monitor Modules shall be Honeywell Model TC809A.

2.13 Addressable Control Relay Output Modules

A. Provide addressable control relay output modules to permit hardwired control capability from the signaling line circuit. Relay contacts shall be DPDT, rated 2 amperes at 24 VDC.

B. Each relay shall operate according to the control program resident in the FACU. Relays shall be supervised for trouble conditions (open, short, device missing/failed) at the FACU.

C. Relay output modules shall include a mounting plate for installation in a junction box.

D. The relay output module shall provide address-setting means and shall also store an internal identifying code which the control unit shall use to identify the type of device.

E. An LED shall be provided which shall flash under normal conditions, indicating that the Relay Output Module is operational and is in regular communication with the control unit.

F. Provide transient suppressors for inductive loads.

2.14 Fault Isolator Modules

A. Fault isolator modules shall provide short circuit isolation for signaling line circuit wiring. Fault isolator modules shall be listed to UL 864, *Standard for Control Units for Fire-Protective Signaling Systems*.

B. The isolator module shall mount directly to a minimum 2 1/8 inch deep, standard 4-inch square electrical box, without the use of special adapters or trim rings.

C. Power and communications shall be supplied by the signaling line circuit.

D. Fault isolator modules shall report faults to the master FACU.

E. After the wiring fault is repaired, the fault isolator modules shall test the lines and automatically restore the connection.

2.15 Notification Appliance Remote Power Supplies

A. General
1. Remote power supplies shall power and supervise a minimum of 2 Class A NACs that shall be capable of being synchronized together on the same circuit, being synchronized together with notification appliance circuits on other power supplies, and being synchronized with notification appliance circuits connected directly to the FACU.
2. Remote power supplies shall have an auxiliary power output for providing remote power to fire alarm system devices other than notification appliances. Devices to be powered from auxiliary power output shall be approved by the Manufacturer and have been tested by a UL and/or FM.
3. Remote power supplies shall be connected to FACU, supervised by and activated by a dedicated Class A notification appliance circuit.
4. Remote power supplies shall be supervised for loss of power, brownout, and battery trouble conditions. NACs shall be supervised for wiring faults including, opens, wire-to-wire short circuits and earth faults. Remote power supply Trouble signal(s) shall report on the FACU display. Additionally, remote power supply shall have visible indicators (LEDs) for displaying Trouble signal(s) and indicating which NAC is in Trouble at the power supply.
5. All locations containing remote control equipment (such as a power supply extender) shall be protected with a smoke detector, in accordance with NFPA 72 – 2010.

B. Manufacturers
1. Honeywell HFP24S6/HFP24S8 Fire Alarm Power Supply.

2.16 Audible and Visible Notification Appliances

A. General

1. All notification appliances shall be rated at 24 VDC and shall be powered by supervised notification appliance circuits originating from the FACU and remote power supplies.

2. The notification appliances shall be installed in accordance with the required audibility levels and the required illumination levels as described in NFPA 72.

3. All notification appliances shall be installed in environmental conditions in accordance with their listing and manufacturer's specifications and installation instructions. Where required, notification appliances that are to be installed in outdoor areas or in areas with harsh environmental conditions shall be tested and listed for outdoor use or for weather-proof applications.

4. Horn notification appliances shall be Honeywell Model HR.

5. Horn/Strobe notification appliances shall be Honeywell Model P2RH.

6. Strobe notification appliances shall be Honeywell Model SCW.

B. Audible (horn) notification appliances

1. Fire alarm horns shall be listed in accordance with UL 464, *Standard for Audible Signaling Appliances.*

2. The horn, whether integral with a combination horn/strobe unit or a separate appliance, shall have a minimum output designation from UL of 90 peak dBA at 10 feet or 15 dBA above the average ambient sound level, whichever is louder.

C. Visible (strobe) notification appliances

1. All strobes shall conform to the requirements of NFPA 72, UFAS and the ADA and shall be listed to UL 1971, *Standard for Signaling Devices for the Hearing Impaired.*

2. All visible notification appliance circuits shall be synchronized and have a rated light output as indicated on design drawings.

2.17 Transmission of Signals

A. All alarm signals in Fire Station 5 and Fire Station 8 shall be transmitted to the Warwick Fire Department via the existing radio Masterbox.

B. Addressable control modules shall be installed on the Signaling Line Circuit to activate each radio Masterbox zone. Addressable control module(s) shall be separated from the rest of the signaling line circuit by fault isolation modules.

C. Masterbox shall report "General Alarm" on one (1) Masterbox Zone, as applicable.

D. Masterbox shall report "Main Waterflow Switch Activation" on one (1) Masterbox Zone, as applicable.

E. Masterbox shall report "Dry System Waterflow Switch Activation" on one (1) Masterbox Zone, as applicable.

F. Masterbox shall report "Kitchen Hood Suppression System Activation" on one (1) Masterbox Zone, as applicable.

2.18 Fire Network Adapter

A. Install Fire Network Adapter in each building as indicated on Contract Documents.

B. Fire Network Adapter shall be Honeywell Model FNA-3 fire network adapter.

C. Install Cat-5e plenum cable from network switch to Fire Network Adapter.

D. Install twisted pair wire from Fire Alarm Control Unit to Fire Network Adapter, per manufacturer's requirements.

E. Install 24VDC power to supply Fire Network Adapter, per manufacturer's requirements.

2.19 Addressable Spot-type Heat Detectors

A. Addressable heat detectors shall be combination rate-of-rise and fixed temperature. Combination rate-of-rise 135 °F fixed temperature models shall be used in areas where ambient temperatures do not exceed 100 °F. 190 °F fixed temperature models shall be used in areas where the temperature does not exceed 150 °F. In either model, the rate-of-rise temperature detection feature shall operate at 15 °F/minute.

B. Addressable heat detectors shall be low profile, ceiling mount type with a positive indication of activation.

C. Detectors shall have a UL listed smooth ceiling rating of a minimum of 2500 square feet.

D. Addressable heat detectors shall be equipped and compatible with remote alarm indicator, where required.

2.20 Linear Heat Detection

A. Protectowire Universal Series Heat Detector model PLR linear heat detection shall be installed above suspended ceilings and in attics as indicated on the drawings.

B. The linear heat detection shall be installed in accordance with the manufacturer's recommendations.

C. The linear heat detection shall be connected to an addressable monitor module on the signaling line circuit.

D. The linear heat detection shall be model PLR-155, unless otherwise noted. The linear heat detection shall be model PLR-190 in all attics.

E. The linear heat detection shall be wired in a Class A arrangement.

F. The total resistance and distance of each circuit shall not exceed 85% of the manufacturer's recommendations.

G. The routing of the linear heat detection shall be documented on the as-built fire alarm documents.

H. The maximum listed spacing for the Protectowire Model PLR-155 and model PLR-190 linear heat detection is fifty-feet (50').

I. Linear heat detection shall be provided with a remote test switch with LED indicator.

2.21 Low Frequency Sounder/Mini-Horn

A. All sounder/mini-horn appliances shall be rated at 24 VDC and shall be powered by supervised notification appliance circuits originating from the FACU and remote power supplies.

B. The notification appliances shall be installed in accordance with the required audibility levels as described in NFPA 72.

C. All notification appliances shall be installed in environmental conditions in accordance with their listing and manufacturer's specifications and installation instructions.

D. Fire alarm sounders mini-horns shall be listed in accordance with UL 464, *Standard for Audible Signaling Appliances.*

E. The horn, whether integral with a combination sounder/strobe unit or a separate appliance, shall produce a 520 Hz +/- 10% square wave tone.

2.22 Combination Smoke and CO Detector

A. Combination Smoke and CO Detectors shall be Honeywell Model TC840C2010 with B200S intelligent sounder base.

B. Combination Smoke and CO Detector shall be listed to UL 268 and UL 2075.

3.0 EXECUTION

3.1 Examination

A. Coordinate examinations with the Owner.

B. Examine and verify actual location of equipment, initiating devices, notification appliances, monitor modules, output modules, fault isolation modules, remote power supplies and other components.

C. Examine and verify actual locations of vertical and horizontal raceway including existing raceway that may be reused.

D. Examine walls and partitions for suitable thickness, fire- and smoke-rated construction, framing and other conditions where equipment is to be installed prior to preparing pre-installation submittal.

E. Promptly report conflicts with proposed solutions.

3.2 Preparation

A. Prepare and submit a minimum of six (6) complete "Pre-Installation Documentation" submittal packages to the Engineer for review prior to submitting same to local officials (as required) for approval and permit. Resubmit portions or entirety of submittal to address Engineer comments prior to submitting package to local officials (as required) for approval and permit. See Part 1 "Submittals" for submittal content.

B. Obtain Owner approval to deliver materials and begin installation once "Pre-Installation Documentation" review process is complete and necessary local approvals and permits have been secured.

3.3 General Equipment Installation

A. Installation, workmanship, fabrication, assembly, erection, examination, inspection and testing shall be in accordance with NFPA 72.

3.4 Initiating Device Installation

A. In general, automatic detectors shall be mounted on the structural ceiling, finished ceiling, or finished wall; as shown on the drawing. Automatic detectors shall be installed as indicated on the plans and in conformance with all codes and Regulations and these specifications. The detectors shall be installed within five (5) feet of the location shown on the drawings to accommodate construction.

B. Automatic detectors shall be located near points where air currents normally intersect. Detectors shall not be located in the direct path of the draft from an HVAC air supply grille, a door, window, or hallway. Detectors shall be installed a minimum of three (3) feet from an HVAC air supply diffuser, in accordance with NFPA 72.

C. Addressable analog photoelectric smoke detectors shall be installed in all common corridors in accordance with this specification, and as shown on the drawings. Unless otherwise shown on the drawings, these common corridor detectors shall be spaced at thirty (30) foot centers, and in accordance with NFPA 72 and the manufacturer's installation instructions. Smoke detectors shall only be installed in those environments suitable for proper smoke detector operation.

D. Addressable heat detectors shall be installed in environments appropriate for proper detection in accordance with NFPA 72 and the manufacturer's installation instructions.

E. In unsprinklered areas where the environment is not suitable for proper operation of addressable heat detectors, conventional spot-type heat detectors shall be furnished and installed. Conventional heat detectors shall be monitored and supervised by addressable monitor modules. Addressable monitor modules shall be installed in an area where the environmental conditions are suitable and the monitor modules' initiating circuits extended to the conventional heat detectors alarm contacts.

F. Manual fire alarm boxes shall be installed at every exit and in common areas in accordance with NFPA 72, as shown on the drawings.

G. Manual fire alarm boxes shall be mounted at a maximum height of 48 inches measured to the activating handle, above the finished floor, in accordance with NFPA 72 and the ADA Guidelines.

3.5 Notification Appliance Installation

A. All wall-mounted visible notification appliances shall be mounted such that that the entire strobe lens is not less than eighty (80) inches and not greater than ninety-six (96) inches above the finished floor, or six (6) inches below the finished ceiling, whichever is lower.

B. All visible notification appliances shall be synchronized.

3.6 Wiring Installation

A. The wiring and raceway system for the fire alarm system shall be in accordance with NFPA 70, *National Electrical Code*. Device and appliance boxes shall be new and low-profile.

B. Furnish metal raceway, wiring, outlet boxes, junction boxes, cabinets, labels and similar devices necessary for the complete installation of the fire alarm system. Wiring shall be of the type as specified herein and recommended by the manufacturer and shall be installed in metal raceway throughout.

C. Fire alarm system wiring within the building shall be installed in EMT or MC cable. MC cable shall only be installed where concealed above acoustic ceiling tile.

D. All wiring shall be installed continuous from device to device.

E. Terminal cabinets with hinged, lockable red covers, by Space Age Electronics, Marlboro, MA, or approved equal shall be provided at all junction points. All conductor splices shall be made on screw-type terminal blocks – wire nuts, butt, crimp or screw type connectors shall not be

used. All terminals within a terminal cabinet shall be properly and permanently labeled. All junction box covers shall be painted red.

F. Raceways containing conductors identified as "Fire Alarm System" conductors shall not contain other conductors, and no AC carrying conductors shall be allowed in the same raceway with the DC fire alarm detection and signaling conductors.

G. Notification appliance circuits and control equipment shall be arranged and installed so that loss of any one (1) notification appliance circuit shall not cause the loss of any other notification appliance circuit in the system.

H. Color coding of conductors shall be approved by the Owner. Unless otherwise indicated, the color code for all fire alarm system conductors shall be as follows:

1. Signaling line circuits and initiating device circuits shall be red and black. Red shall be positive and black shall be negative.

2. Audible notification appliance circuits shall be blue and white. Blue shall be positive and white shall be negative (NAC).

3. Sprinkler/standpipe circuits shall be red and black. Red shall be positive and black shall be negative.

4. Smoke detector power circuits shall be brown and violet. Violet shall be positive and brown shall be negative.

5. Auxiliary remote power supply circuits shall be brown and violet. Violet shall be positive and brown shall be negative.

6. Electro-magnetic door hold-open circuits shall be gray and gray.

7. HVAC shut-down circuits shall be orange and yellow.

8. Remote annunciator circuits shall be violet and numbered at each end.

9. Bond wires from the control unit to the master box ground rod, and all required bonding conductors shall be green.

10. AC supply circuit to the main FACU shall be white, black and red. The black shall be one phase, and the red shall be the opposite phase, if required. The white shall be the neutral. If a separate feed is required for the battery charger, it shall be black and white unless the main FACU requires only one AC feed. In that case, the conductors to the battery charger shall be red and white.

I. Exposed raceways shall be run parallel and perpendicular to the walls and ceilings only in permitted areas. Raceway shall not be exposed in common corridors, and common spaces. Raceway shall only be exposed in mechanical spaces, electrical rooms, and storage spaces. Wherever practical, exposed raceways shall be run on the ceiling as close as possible to a wall or as high as possible on a wall. Where exposed raceways shall cross under a structural beam or rib, they shall be run down on one side of the beam or rib, across its bottom, and up to the ceiling on the other side of the beam or rib. No spanning from beam to beam or rib to rib shall be per-

mitted. The use of a raceway body on one side of a beam or rib shall be permitted provided it shall be readily accessible.

J. Fault isolator modules shall be furnished as required and shall be mounted as directed by the manufacturer. The field location of the fault circuit isolators shall be labeled so that the devices may be easily located, and that location shall be noted on the point-to-point and as-built drawings.

K. The power employed to operate the fire alarm system shall have a high degree of reliability and capacity for the intended service. Connections to this power service shall be made on a dedicated branch circuit(s). The circuit shall be mechanically protected.

L. The electrical supply to the FACU shall be equipped with a dedicated fused disconnect with a handle that can be locked in the *"power on"* position. This disconnect is to be provided at the connection to the normal power supply serving the FACU. Circuit disconnecting means shall have a red marking, shall be accessible to authorized personnel, and shall be identified as "FIRE ALARM CIRCUIT CONTROL." The location of the circuit disconnecting means shall be permanently identified on a nameplate installed on the inside of the FACU.

M. All wiring within the control unit shall be neatly served in the panel gutters and be secured by means of Thomas & Betts "Ty-Raps" or by other approved means.

N. Where penetrations of floor slabs, fire-resistance rated walls and/or smoke barrier walls are made, the wiring shall be sleeved in metal raceway and the penetrations shall be fire-stopped with UL Listed through-penetration firestop assembly.

O. All signaling line circuits connecting remote control units and amplifier transponders on the network shall be wired Class A.

3.7 Identification

A. Provide "P-Touch", or approved equal, adhesive markers indicating the device address with minimum 12-point font lettering in the following locations:

1. Outside of addressable smoke detector bases.
2. Outside of addressable spot-type heat detector bases.
3. Outside of addressable manual fire alarm boxes.
4. Outside of addressable monitor modules.
5. Outside of addressable relay output modules.
6. Outside of addressable fault isolator modules.

B. See Part 3 "Wiring Installation" for identification of conductors.

C. Provide identification tags or remote alarm indicators to identify location of above-ceiling spot-type heat detection.

3.8 Field Quality Control

A. Work shall be performed in accordance with the best and the most modern practices of the trade. The entire system shall be installed in a neat and workmanlike manner, in accordance with the standard instructions and recommendations of the manufacturer and in accordance with the approved manufacturer's wiring diagrams unless otherwise specifically permitted by the Owner and the Engineer.

B. The system shall be installed under the supervision of a qualified, trained, NICET (minimum Level III) Certified manufacturer's representative. The technical representative is expected to be on site with the Contractor during the installation of wiring and during the entire time of final connections and testing of the fire alarm system. The system shall be demonstrated to perform all of the functions as specified.

C. The supervisory work of the qualified manufacturer's technical representative shall include, but not necessarily be limited to, checking all the system wiring connections; advising the Contractor regarding technical details of the installation; and the adjustment and testing of all components of the system in order to ensure a complete and satisfactorily operable system. The manufacturer's technical representative shall be on site, as required by the Owner and the Engineer, during the entire installation and connection of the new control equipment. The technical representative shall monitor all wiring changes and assist the Contractor to ensure a smooth transition to the new control equipment. The cost of the technical representative shall be paid by the Contractor and shall be included in the bid price. The minimum amount of man-hours for this technical representative to be carried is 40 hours. The Contractor shall identify the amount of manufacturer's technical representative's man-hours that shall be provided and the per-hour cost (including the cost for possible overtime [premium] hours) for the technical representative's time.

D. Perform Test to verify wiring is free from grounds and short circuit faults. Document and endorse results, and forward to the supplier, the Owner and the Engineer. No connections to the FACU shall be made until the system wiring has been accepted by the equipment supplier.

E. Perform inspections and tests required by NFPA 72-2010, "Inspection Testing and Maintenance" for control equipment, batteries, conductors, remote transmission, remote annunciators, initiating devices, notification appliances and auxiliary functions.

1. Replace system components that do not pass test procedures and retest to demonstrate compliance. Repeat procedure until satisfactory results are obtained. Replace detectors that our outside their marked sensitivity range.

2. Use the NFPA 72-2010 "Record of Completion" to document the inspection and test results.

3.9 Cleaning and Protection

A. Do not install smoke detectors prior to substantial completion by other portions of the Work.

B. Remove paint splatters and other spots, dirt, and debris. Touch up scratches and marred finish to match original finish. Clean unit(s) internally using methods and materials recommended by manufacturer.

3.10 Equipment Removal

A. Completely remove all existing fire detection, alarm system control equipment, wiring and components and equipment. The equipment removed shall be boxed, labeled and delivered to the Owner. All unused, fire alarm system wire and cable shall be removed and disposed of properly off-site.

B. Perform all removal work efforts in accordance with the best and most modern practices.

3.11 Engineer Pre-Acceptance

A. Prepare and submit one (1) complete "Pre-Acceptance Documentation" submittal package to the Engineer a minimum of five (5) business days prior to proposed pre-acceptance test date. See Part 1 "Submittals" for submittal content. Resubmit portions or entirety of submittal to address Engineer comments prior to scheduling test date.

B. Schedule Pre-Acceptance Test with Owner, Engineer and related trades once submittal package was been reviewed to the satisfaction of the Engineer. Tests shall not be scheduled or conducted prior to satisfactory review of "Pre-Acceptance Documentation" submittal package.

C. Demonstrate system functional performance. Document testing results in the format specified by NFPA 72-2010 Figure 10.6.2.3; at a minimum, perform the following:

1. Functionally operate, in accordance with NFPA 72-2010, each fire alarm initiating device to ensure proper operation, correct annunciation at each remote annunciator (as shown on the drawings) and at the control unit and proper operation of all alarms and auxiliary functions. "Magnet" testing of smoke detectors will not be accepted as a functional test. A "wick/punk" source must be used in accordance with manufacturer's recommendations.

2. All manual fire alarm boxes shall be tested.

3. All auxiliary functions shall be tested including AHU shutdown and door hold-open deactivation.

4. All automatic extinguishing system switches shall be activated by flow of water.

5. All valves shall be mechanically operated. Valve supervisory switches shall be tested for change of state.

6. The signaling line circuits and the notification appliance circuits shall be opened in at least two locations per floor to check for the presence of correct supervisory circuitry.

7. The notification appliances shall be tested to automatically activate the audible and visible notification appliances throughout the building.

8. One-half of all tests shall be performed on battery standby power.

D. A 24-hour battery test shall be performed followed by a 5 minute alarm test period for all local systems.

E. A 60-hour battery test shall be performed followed by a 5 minute alarm test period for all municipally-connected systems.

F. Reschedule testing where unsatisfactory results cannot be resolved such that testing can be completed during business hours on the scheduled day. See Owner "General Agreement" for possible additional costs and penalties.

G. Upon satisfactory completion of the Pre-Acceptance Test, leave the system operating for a minimum of one week prior to the Final Acceptance Test.

3.12 Authority Having Jurisdiction Final Acceptance

A. Prepare and submit a minimum of six (6) complete "Final Acceptance Documentation" submittal packages to the Engineer for review prior to submitting same to local officials for final system approval. Resubmit portions or entirety of submittal to address Engineer comments prior to submitting package to local officials. See Part 1 "Submittals" for submittal content.

B. Submit reviewed "Final Acceptance Documentation" submittal package to authority and coordinate scheduling (minimum ten (10) business days notice) of common fire sprinkler and fire alarm system acceptance testing. If acceptable to the authority, the reviewed "Approval Documentation" submittal may be submitted to the authority at the time of the final acceptance tests.

C. Coordinate with fire sprinkler portion of final acceptance tests. Operate as required.

D. Demonstrate system operations to authority having jurisdiction as necessary.

E. Reschedule testing where unsatisfactory results cannot be resolved such that testing can be completed to the satisfaction of the authorities. See Owner "General Agreement" for possible additional costs and penalties.

F. Upon satisfactory completion of the tests, leave the fire alarm system in proper working order.

3.13 Project Closeout Procedures

A. Prepare and submit a minimum of six (6) closeout documentation packages to the Engineer for review prior to scheduling Owner demonstration and training. Resubmit portions or entirety of submittal to address Engineer comments prior to scheduling demonstration and training. See Part 1 "Submittals" for submittal content.

B. Schedule Owner demonstration and training with the Owner for each building. Provide at least five (5) working days notice.

C. Demonstrate equipment, specialties, and accessories with the Owner. Review operating and maintenance information with the Owner.

1. Alarm Service Company & Building Manager: Prior to final acceptance of the fire alarm system, provide operation training to each shift of the Owner's designated Building Manager. Each training session shall be a minimum of 1 hour and shall be conducted on shift or at a time acceptable to the Owner. Each session shall include an overview of the system and the devices connected to it, emergency procedures (including alarm, trouble and

supervisory condition procedures), control panel operation, and safety requirements. Each session shall include a complete demonstration of the system.

2. The manufacturer's technical representative shall also be required to instruct designated building and management personnel in the general operation of the system and to give the designated personnel an overview of the system functions when the system is in normal, supervisory mode, alarm mode, and trouble mode, as specified in this specification.

END OF SECTION 16720